Rock Products

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NATHAN C. ROCKWOOD
Editor

T. BIRCHLER
Assistant Editor

A. PERRIN
Manager

RICHARD S. DARLING
Eastern Representative

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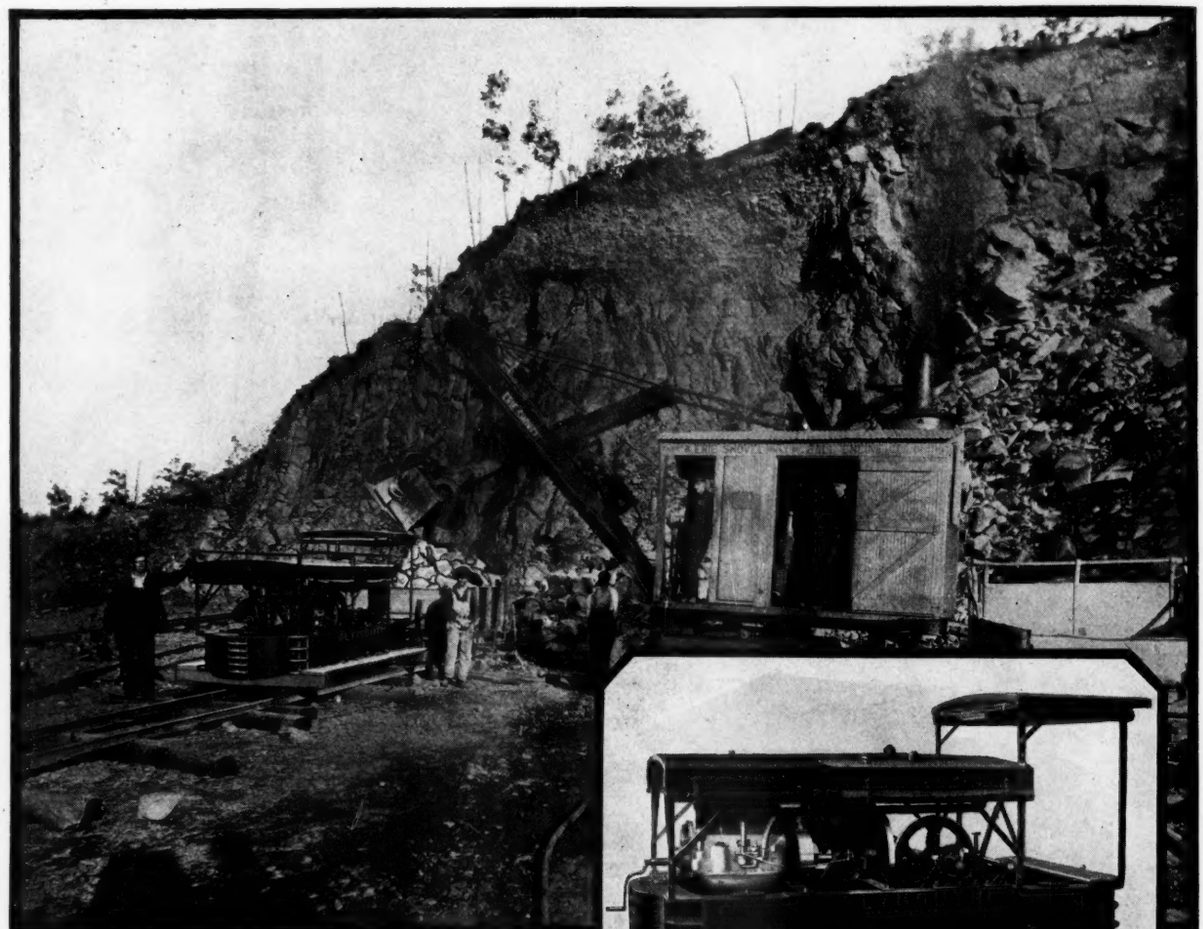

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New York Philadelphia Norfolk Pittsburgh Cleveland Detroit Chicago Minneapolis Portland

Rock Products

Vol. XXII Chicago, January 15, 1919 No. 2

The Day of the Trade Association

Coming Meetings Emphasize Accomplishments in Cooperative Effort and the Need of Concentrating Activities

THIS is the season of trade association meetings in the Rock Products Industries. In this new year, 1919, the meetings come at a most opportune time, for they give operators a chance to face conditions squarely before the full force of those conditions is met. In many respects these new conditions are much more vital to the future of the industry than the war conditions have been.

First we have the freight-rate problem, the developments of which during the last week or two have aroused operators throughout the Central West. Instead of much desired reductions in freight rates it looks now as if the producers of crushed stone, sand, gravel, slag and agricultural limestone will have to fight revisions which in the majority of cases will be upward instead of downward.

The seriousness of this situation with highway contracts in many states about to be let is recognized by every road material man and contractor. Not only is it feared that contractors will not bid, or will boost prices beyond all reason, but highway officials themselves are beginning to exhibit conservatism in making large expenditures with prices higher than ever before.

Much the same condition exists in the labor situation where organized labor not only shows an unwillingness to accept reduced wages, but in many instances is actually clamoring for more. In holding their own in a struggle with the Federally organized railroads and unionized labor only the strongest possible trade associations, or group of trade associations, can expect to succeed. On the freight-rate problem at least the situation calls for cooperation of all the allied industries in the rock products field, as well as the active assistance of every other industry interested in highway construction—and what industry ought not to be interested, even the railways themselves?

Your Duty as a Citizen

THE MOST PRESSING problem of the moment is the stabilization of our industries. Safety and stability of industry can only be brought about by collective effort. The problem is too big for individuals. The organized trade associations furnish the means of collective thinking and joint action —the essentials of efficient collective effort. Therefore it is your duty as a patriotic citizen to support the organization which will work for the stabilization of your industry. However sound your own individual position may now be, it must be remembered that in the last analysis the general condition of the industry is going to be a very important factor.

Keep these dates in mind:

NATIONAL ASSOCIATION OF SAND AND GRAVEL PRODUCERS
Chicago, Jan. 28 and 29

NATIONAL CRUSHED STONE ASSOCIATION
Buffalo, Feb. 11 and 12

THE LIME ASSOCIATION
Pittsburgh, Feb. 12 and 13

Then there is the matter of the future attitude of the Government toward trade associations. In its problems of mobilizing industry for the prosecution of the war the Government practically insisted on the organization of industries. Now the crisis having passed the attorney general under date of December 30, 1918, issued a statement to this effect: Concerted price-fixing by any industry after the Government ceases to exercise price control January 1, 1919, will be regarded by the Department of Justice as in restraint of free competition. The attitude of the Department of Justice is stated to be a determination to enforce to the limit existing anti-trust laws.

The present Sherman anti-trust law is antiquated; it is insufficient to meet the present critical situation when the Government and the public need all the assistance the trade associations can give. There is no provision in the Sherman law for consideration of whether or not the suppression or limitation of competition is beneficial to the public, although the Railway Administration branch of the Government certainly believes so and has acted to that end.

What is sauce for the goose is sauce for the gander. If the Government holds that cut-throat competition was detrimental to the public in the case of the railways, there is absolutely no excuse for attempting to enforce the same cut-throat competition in other industries.

Freight Rates Chief Topic of Discussion at Two Producers' Meetings

National Agricultural Limestone Association Makes A. P. Sandles Secretary—National Slag Association Re-elects Old Officers

PROPOSED CHANGES in freight rates referred to in ROCK PRODUCTS of January 1, page 4, which will probably result in appreciably increasing many of the existing rates on sand, gravel, crushed stone, agricultural limestone and slag, was one of the principal subjects of discussion at the reorganization meeting of the National Agricultural Limestone Association at Columbus, Ohio, January 7, and of the National Slag Association's annual meeting on January 10 at Cleveland.

Both Associations Will Fight for Justice in Rates

Both the agricultural limestone producers and the slag men were agreed that these commodities could not stand any further increase in rates, and that a determined effort should be made to have the justice of their cause presented to the railways. The National Agricultural Limestone Association appointed the following traffic committee to investigate the proposed rates and to report as soon as possible to the Secretary of the Association at Columbus: Henry Angel, Kelley Island Lime & Transport Co., Cleveland; W. H. Hoagland, Marble Cliff Quarries Co., Columbus; W. A. Jackson, Carbon Limestone Co., Youngstown; L. H. Hawblitz, France Stone Co., Toledo, and Nathan C. Rockwood, Editor of ROCK PRODUCTS, Chicago. The National Slag Association authorized the executive committee, consisting of F. A. Sarstedt, L. A. Beeghley, L. H. Hawblitz, E. H. Kuttner and C. L. McKenzie, to act as a traffic committee and to cooperate with similar committees of the other national associations to combat the proposed freight rate increase.

Sandles Made Secretary of Limestone Association

The most important business transacted by the National Agricultural Limestone Association was the election of A. P. Sandles as Executive Secretary in charge of publicity and promotional work. Mr. Sandles has already distinguished himself in this kind of work as Secretary of the Ohio Macadam Association and of the National Crushed Stone Association, and is peculiarly well fitted to add to these many activities those of promoting the use of agricultural limestone. He is himself a practical farmer, a prominent Granger, a director of the Federal Land Bank at Louisville, and the Editor of the Rural Welfare Department of the Toledo "Blade." He is a former Secretary of Agriculture of the State of Ohio, where his work in promoting juvenile corn growing contests and his trips about the country with the boy prize winners attracted national attention.

The Many-Sided Sandles in his Columbus Workshop—On the Job from 5 a. m to 11 p. m.

Mr. Sandles will devote only a portion of his time to the direction of this new work, but he has acquired for his assistant and right-hand man C. R. Wagner, a successful Ohio farmer, formerly Director of Farm Institutes of the State and for many years one of the Institutes' lecturers.

Association Reorganized

The Association has been thoroughly reorganized with practically all of its old members, and it is expected that an intensive promotion campaign will be started at once. It is intended to expand the field of these activities as fast as the conditions and growth of membership justify. The Limestone Association will be able to make use at once of the very valuable advertising medium of "Macadam Service" which Mr. Sandles has built up in the last year, and which now has a circulation, largely in rural Ohio, of over 6000. It is expected to increase this circulation, with the help of the Limestone Association, to 10,000 within a short time.

National Slag Association Re-elects Old Officers

AT THE MEETING of the National Slag Association at Cleveland January 10 the following officers were re-elected: President, F. A. Sarstedt, of the Cleveland Macadam Co.; Vice-President, C. E. Ireland, of the Birmingham Slag Co., Birmingham, Ala.; and Secretary-Treasurer, H. J. Love, 933 News Leader Building, Cleveland.

The meeting was chiefly devoted to the discussion of ways and means of continuing the association's work. It was decided that the present condition of the industry did not justify extensive research work which would develop many new uses for blast-furnace slag, such as the manufacture of vitrified ware, mineral wool, and many other things which can be done with the slag.

In all about 80 per cent of the commercial blast-furnace slag tonnage of the country is now represented in this Association, whose immediate aim is standardization of this product when used for railroad ballast, concrete aggregate, or macadam highway construction.

Limestone Gets Results

BROOME COUNTY, N. Y., this year used 8,000 tons of limestone, an increase of 3,000 tons over the amount used one year ago. This increase has been due to the emphasis which the farm bureau and county agent have placed upon the value of applying limestone to the soil. One farmer applied one ton of ground limestone an acre in 1917 at the time of seeding. In 1918 the limed area produced 5,324 pounds of hay, while the plot beside it having no lime produced only 4,017 pounds, 1,307 pounds in favor of lime. Another farmer top-dressed hay land, that had been mowed one year, with one-half ton of marl per acre. On the limed area he secured 4,200 pounds of hay and on the unlimed area 2,160 pounds, a difference of 2,040 pounds. Still another farmer used one ton of lime an acre at the time of seeding. On the limed acre he produced 5,324 pounds of hay and on the unlimed acre 2,904 pounds, a difference of 2,420 pounds in favor of limestone.—Food and Farming Weekly, No. 32, U. S. Dept of Agriculture.

Income Tax of Departing Alien Laborers Must be Paid by Employers

Employer Is Held Responsible Even When Men Have Been in His Employ Many Years

ARE YOU WITHHOLDING the 2 per cent income tax on the incomes of non-resident aliens, many of whom are preparing to leave this country in the near future? In applying for his passport to return to Italy, a Wisconsin quarry man found that one of his employees—who had been with him for seven years—had made an affidavit that he was a non-resident alien. Now the collector of internal revenue of this district holds that the quarry man should have withheld the 2 per cent income tax, and that his company is responsible for it. How many of your employees are expecting to receive passports as non-resident aliens?

This quarry man concludes that the only safe course in the future is to require all alien laborers to sign a certificate (Form 1078, U. S. Treasury Department, Internal Revenue Income Tax) declaring their intention to become residents. He states:

"The Treasury Deparment decisions do not seem to be well founded, but the best and easiest way out seems to be to concede that they are correct and act accordingly by getting certificates signed.

"The thing the Treasury Department wants to do is to avoid foreigners coming over here working for two or three years, more or less, accumulating money and taking it back to the old country with them; in the meantime contributing absolutely nothing in the way of taxes. I think this is commendable in the Treasury Department, but it is going to be a hard thing to do. Even where a foreigner signs the certificate of residence, Form 1078, there is nothing to prohibit him changing his mind tomorrow and going back to the old country and taking his earnings with him, but, nevertheless, his having signed the certificate relieves the employer from all liability, and the logical thing to do seems to be to get the certificate signed.

"There seems to be a general intention throughout the United States to enforce the collection of taxes from non-resident aliens."

Some Treasury Decisions
T. D. 2313 Income Tax

Taxibility of interest from bonds and dividends on stock of domestic corporations owned by non-resident aliens, and the liabilities of non-resident aliens under section 2 of act of Oct. 3, 1913.

Treasury Department,
Office of

Commissioner of Internal Revenue,
Washington, D. C., March 21, 1916.

To Collectors of Internal Revenue:

Under the decision of the Supreme Court of the United States in the case of Brushaber v. Union Pacific Railway Co., decided January 24, 1916, it is hereby held that income accruing to nonresident aliens in the form of interest from the bonds and dividends on the stock of domestic corporations is subject to the income tax imposed by the act of October 3, 1913.

Nonresident aliens are not entitled to the specific exemption designated in paragraph C of the income tax law, but are liable for the normal and additional tax upon the entire net income "from all property owned, and of every business, trade or profession carried on in the United States," computed upon the basis prescribed in the law.

The responsible heads, agents, or representatives of nonresident aliens, who are in charge of the property owned or business carried on within the United States, shall make a full and complete return of the income therefrom on Form 1040, revised, and shall pay any and all tax, normal and additional, assessed upon the income received by them in behalf of their nonresident alien principals.

The person, firm, company, copartnership, corporation, joint-stock company, or association, and insurance company in the United States, citizen or resident alien, in whatever capacity acting, having the control, receipt, disposal or payment of fixed or determinable annual or periodic gains, profits, and income of whatever kind, to a nonresident alien, under any contract or otherwise, which payment shall represent income of a nonresident alien from the exercise of any trade or profession within the United States, shall deduct and withhold from such annual or periodic gains, profits, and income, regardless of amount, and pay to the officer of the United States Government authorized to receive the same such sum as will be sufficient to pay the normal tax of 1 per cent imposed by law, and shall make an annual return on Form 1042.

The normal tax shall be withheld at the source from income accrued to nonresident aliens from corporate obligations and shall be returned and paid to the Government by debtor corporations and withholding agents as in the case of citizens and resident aliens, but without benefit of the specific exemption designated in paragraph C of the law.

Aliens Coming to the United States With the Intention of Becoming Permanent Residents Thereof

Aliens coming to the United States with the intention of becoming residents thereof within the meaning and intent of the income tax statute, may establish that fact and have the privilege of resident aliens under the statute by filing with withholding agents a certificate in the following form (Form 1078) under oath, and which certificate shall be filed by said withholding agents with Collectors of Internal Revenue as justification for withholding on the basis of "residence" in the United States. (T. D. 2242, Sept. 17, 1915.)

Resident Aliens

"Residence" as used in Subdivision 1, Paragraph A of the Act of October 3, 1913—is held to be—

"That place where a man has his true, fixed and permanent home and principal establishment, and to which whenever he is absent, he has the intention of returning; and indicates permanency of occupation as distinct from lodging or boarding, or temporary occupation."

For the purposes of the income tax, it is held that where for business purposes or otherwise, an alien is permanently located in the United States; has there his principal business establishment and is there permanently occupied or employed, even though his domicile may be without the United States he will be held to be within the definition of—

"Every person residing in the United States, though not a citizen thereof * * *" (T. D. 2242, Sept. 17, 1915.)

Aliens Temporarily Living in the United States

"Residence" as used in Subdivision 1, Paragraph A of the Act of October 3, 1913, is held to be—

"That place where a man has his true, fixed and permanent home and principal establishment, and to which whenever he is absent, he has the intention of returning; and indicates permanency of occupation as distinct from lodging or boarding, or temporary occupation."

For the purposes of the income tax, it is held that * * * aliens who are physically present in the United States, but only temporarily resident or employed therein (as for a season or other similarly definite term, and with the expectation or intention of leaving the United States upon the termination of employment or accomplishment of the purpose which necessitated presence in the United States), are within the class of—

"Persons residing elsewhere * * *" (T. D. 2242, Sept. 17, 1915.)

Concrete Sea-Wall for City

GALVESTON, TEXAS.—It is probable that the extension of the concrete sea-wall which is now being made may be continued so as to encircle Fort San Jacinto entirely. It would require approximately 10,000 feet of further extension, above that now under contract, to accomplish this, it is stated.

The Railway Rate Problem

High Time for Rock Product Producers to Get Busy and Find Out Where They Stand

AT THE RECENT MEETING of the National Industries Traffic League in Cincinnati, the president, G. M. Freer, traffic manager of the Cincinnati Chamber of Commerce, made the following pointed remarks. They should be thoroughly absorbed by all producers and shippers in the rock product industries, because time is slipping away and soon the spring construction season will be upon them, unprepared for the new traffic conditions the Government is going to spring on them.

"Our whole rate structure is being revised pretty much as the railroads themselves desire. Elimination of and modification of practices of long standing are taking place which will result injuriously to the shipping public, yet we sit supinely by and note the changes without raising a voice in protest. Are we really awake to the situation, and if so, what action are we to take? Increase after increase in rates is being made, either directly by way of specific advances or indirectly by changes in classification. the elimination of exceptions and by raising the carload minimum weights, etc.

"Do all of these originate in the mind of the Director General or are they the individual ideas of the officers of the railroads serving the Government and in the interest of the railroads themselves if the roads were operated individually as heretofore?

"Matters are drifting into a serious state and the shippers must take some stand to protect their interests in looking forward to the future operation of the railroads after the war; and they should indicate at this time if, in view of the developments under Government operation, they are desirous of so continuing or if their interests are best served under private or individual ownership.

"One of the stated policies of the Railroad Administration is to give service to the public, which is the purpose for which the railroads were built and given the privileges accorded them. This implies the maintenance and improvement of the railroad properties so that adequate transportation facilities will be provided at the lowest cost, the object of the Government being to furnish service rather than to make money.

"Is the co-ordination of the water and rail lines or the subordination of the water to the rail lines in the interest of the public, and is the public being best served by being compelled to pay the same or practically the same for water transportation as for rail transportation; and does this not establish a precedent which will be hard to overcome under private or individual ownership? Under the power vested with the President to control and operate the railroads during the period of the war, is it not a fact that rate increases and changes in rules and regulations are to be made only in the interest of making successful the operation of the roads during the war period and as the emergency may arise or is unlimited power granted to make permanent changes by the reconstruction of the rate structure which will be firmly established and handed back to the privately or individually owned roads, thus perpetuating the ideas conceived during the period of the Governments administration."

Are these matters that concern the Administration in the operation of the roads during the war period? The Railroad Administration is surrounded by astute railroad men who, while employed by the Government, still have in mind that their interests are centered in the railroads as individuals and they are laboring to the end of bringing about changes which are inimical to shippers' interests and which heretofore have not been countenanced by the Interstate Commerce Commission and State Commissions. Once put into effect, it will be difficult to unscramble, with the result that shippers will be engaged in endless litigation in bringing order out of chaos. This brings me to the point of raising the following uestions:

First: Is the Railroad Administration, in promulgating these changes. doing so strictly as a war measure and as temporary expediency?

Second: Are the shippers convinced that this is the object and purpose of the Railroad Administration?

Third: Are the changes already made and those proposed in the interest of the shipping and general public?

October Exports of U. S. Stone

FROM figures now available, it is shown that stone exports from the United States in October reached a total of $43,288. Of this amount the Dutch East Indies used $23,984, being the largest consumer; shipments to British South Africa aggregated $3,834, and to the British West Indies, $1,191.

Railway Rate Changes Authorized by I. C. C.

THE INTERSTATE COMMERCE COMMISSION has just issued an order (known as the 15th Section Order 1020), affecting in an important way the rates on lime, stone (crushed, broken and ground), sand, gravel and cement, where transportation rates are made on combination of commodity rates or of commodity and class rates. This order is issued on petition of the U. S. Railroad Administration, and authorizes the publication of tariffs by carriers on one day's notice, applicable jointly to points located on the lines of Federal controlled carriers and points on or reached via the lines of carriers not under Federal control.

Under this order, where no published rates are in effect from point of origin to destination on the commodities above named, and two or more commodity rate factors are used in arriving at the through rate for the continuous rail shipment, such through rate will be arrived at by deducting from each commodity rate factor the amount named for each commodity included in Section 2 of the aforesaid order; that the reduced commodity rates will then be added together; and to the sum of the separately established commodity rate factors thus obtained, there will be added the amounts named in the order.

Lime Association Forestalls Freight Advance on Lime

ON FRIDAY, JANUARY 3, the lime manufacturers in District 5 appeared before the officers of the Railroad Administration in Richmond, Va. They were summoned to show cause why the freight rate on lime should not be increased 25 per cent in that district.

The objects of the Lime Association were explained to the representatives of the Railroad Administration and they were convinced that at this time, to advance the freight on lime, especially that used in agriculture, would operate in the long run as a serious handicap to the development of the agricultural resources of the south. The document which turned the scale in favor of the Lime Association was the resolution of the Advisory Committee of the Department of Agriculture, headed by Governor Stuart, which was presented to the Secretary of Agriculture last August. (This resolution was published in ROCK PRODUCTS of August 28, 1918, page 15.)

The success following its use in Richmond encourages the officers of the Lime Association to believe that a similar broad view may be taken of this matter by other district freight traffic committees throughout the country.

Record of Highway Industries Association

President Williams Takes Exception to Rock Products' Report of Chicago Meeting —Denies Antagonism to Office of Public Roads

MANY READERS OF ROCK PRODUCTS are members of the Highway Industries Association, either as individual firms or through their membership in one or the other national trade associations, and to them the following statement of President S. M. Williams will prove very interesting reading. Rock Products regrets that the article on p. 14 of the December 18 issue describing the recent Chicago Road Congress should be construed as a criticism of the Highway Industries Association; but is pleased that one result of the article should be this very frank and full statement of the association's activities during the past year.

It was not the intention to criticize the Association for antagonism to the Office of Public Roads. Rock Products believes such antagonism would have been perfectly justified, and has intimated in these columns many times during the past year that the Office of Public Roads and the Department of Agriculture were asleep at the switch.

As to the best method of expending Federal money for highway improvement Rock Products does believe there are two radically distinct groups, each of which is probably equally sincere. One advocates a system of Federally built and maintained trunk-line highways —transcontinental in scope, the other advocates letting the states themselves spend the money as they see fit—possibly for systems of roads radiating from the market and shipping centers into the surrounding agricultural producing country.

These latter are sincere in believing that interstate, transcontinental highway transportation is an economic impossibility under normal conditions, and they see no reason why it should be encouraged, while hundreds of thousands of farms and villages remain inaccessible to nearby markets and railway shipping centers. It is true that a good deal of this sentiment is in the agricultural South and Central West, particularly in the South where before the war period the railways were strong supporters of the good roads movement.

What Rock Products intended in publishing the article referred to was to call attention to the folly of attempting to force upon the highway authorities of our agricultural states a system of trunk-line roads which at this stage of the game may be neither desirable or economically sound. Material men will do better to ignore national issues and work constructively to give their communities what their communities want, if they hope for permanence in the good roads boom. With this explanation of its stand, Rock Products takes pleasure in presenting Mr. Williams' criticism:

Association Has No Selfish Motives

When one of our leading publications recently stated that "The Highway Industries can well afford to entirely ignore any thought that in working for good roads they are working in their own interest, that they are working for the interest of the Nation and every mile of good road built adds to the sum of human happiness and to the Nation's ability to utilize its resources for the production of food stuffs and for increasing its manufacturing facilities" it expressed the same thought and purpose which caused the highway industries of the United States to come together in the organization of the Highway Industries Association about one year ago. The highway industries sincerely and honestly believed it was their patriotic duty rather than a selfish privilege to urge that highways must be aggressively advocated as essential to the Nation's life. This duty was magnified by the recent statement from Herbert C. Hoover, Federal Food Commissioner, that 50 per cent of the perishables produced in America are wasted largely through ineffective means of getting them to market.

In the article appearing in your publication we find the following statement: "Ever since the inception of the Highway Industries Association it has been antagonistic to the Office of Public Roads." This statement is absolutely false from every standpoint. When the Highway Industries Association began its work in Washington we frankly said to all departments and agencies, "We are here to co-operate with you in every possible way so long as your department wishes and desires to meet the economic needs of the country in highway development." The Director of the Office of Public Roads frequently expressed to Mr. Shirley and the writer his appreciation of the thorough co-operation from the Highway Industries Association and on two different occasions expressed a wish that he might deal with all the industries through the Highway Industries Association rather than with them individually. I will later quote from one of his letters in which he expressed appreciation of our co-operation.

The article also attempts to justify its statement by saying, "In the attempt to have the Chamber of Commerce of the United States adopt a Resolution at its convention last summer declaring for a change in the method of Federal highway supervision. It was voted down there." It is true there was an attempt made at the Chicago meeting to call for a radical change in the federal control of our highways but the Highways Industries Association stood against the proposition and urged that the Office of Public Roads be given a further chance, inasmuch as the Director of that Office had assured and promised the Highway Industries Association that his Department would guarantee the continuance of the essential highway construction and maintenance of the country.

Original Resolution on Federal Supervision

The Resolution for which the Highway Industries Association was directly responsible called for two specific things, first—"that we urge upon the Federal Government and the several States the importance of adopting a program that will insure adequate highway construction and maintenance so that our highways may properly carry their share of the burden of transportation"; second—"that we urge upon the President and members of Congress the creation of a central federal authority to determine the highway policy of our Government with power to direct the administration of that policy." It was not the intention at that time to ask for a Federal Highway Commission because we wanted to be fair and give the Office of Public Roads a chance to work out the problem to the satisfaction of the public.

The Resolution was not "voted down" but was unanimously passed by the transportation meeting of the Chamber of Commerce of the United States in session Thursday afternoon, April 11th, 1918, and by them referred to the Board of Directors, who approved it and referred it to the Resolutions Committee, by whom it was not reported in detail but combined in a general transportation Resolution covering railway, waterway and highway, and which was prepared without an understanding of the specific things set forth in the Highway Industries Association Resolution by Mr. Parker, Manager of the New Orleans Chamber of Commerce and a delegate to the Chamber of Commerce. Mr. Parker's organization was one of the first to re-indorse the Highway Industries Association Resolution.

That our action in this matter was co-operative rather than "antagonistic" to the Office of Public Roads is shown by the following paragraphs from a letter signed by L. W. Page, then Director of the Office of Public Roads, under date of May 27th, 1918.

"I have your letter of May 13, inquiring as to what action has been taken with reference to a resolution recently sent out by your Association in regard to the Government's policy toward road work.

"As a result of the foregoing activities, we have now arrived at a point where the various phases of road work from the standpoint of the Federal Government will be dealt with jointly by representatives of the War Department, the War Industries Board, the Fuel Administration, the Railroad Administration, the Shipping Board and this Office. This joint action will provide a centralized governmental body, such as is contem-

lated by the resolution sent out by your organization.

"In the handling of these various problems, I wish to express my appreciation of the cordial co-operation which has been extended by your Association in bringing about the results which have been accomplished."

That our action was approved by the Highway Officials is also shown by the following letter signed by G. P. Coleman, then Chairman of the Executive Committee of the American Association of State Highway Officials, under date of April 22, 1918:

"The resolutions unanimously adopted by the meeting on Highway Transportation of the Chamber of Commerce, Chicago, Thursday, April 11, 1918, have received the endorsement of the Executive Committee of this Association.

"We believe the recommendations of the resolutions are important and necessary, and should be made operative at the earliest possible date."

The Atlantic City Resolution

The reference to the Resolution at the recent Atlantic City meeting of the War Service Committee of the Chamber of Commerce of the United States is decidedly misleading and unfair. The Resolution referred to was the recommendation of the War Service Committee on highways who based their recommendations upon the suggestions coming from a meeting in Atlantic City on December 2nd, 1918, of highway officials and all highway industries were represented.

On page 20 of the December 18 issue of your publication you state: "The Resolution adopted by the Highway Industries Association earlier in the day calling for a National highway commission with appropriate federal appropriations was unanimously approved." Why should the Highway Industries Association be charged with antagonism toward the Office of Public Roads when your own industries along with 80 per cent of the various interests at Atlantic City, approved the Resolution? It is true, the Resolution was not reported by the Clearance Committee of the convention, but if you will be fair to the public you will tell them why it was not reported and that it was killed, first, by one interest that has always opposed highway development in this country from a selfish standpoint and the other because they have always opposed anything that looked like federal control.

As evidence of the close co-operation between the Highway Industries Association and the American Association of State Highway Officials, I will quote from a letter signed by Col. W. D. Uhler, then President of the Highway Officials Association, under date of May 17, 1918.

"At the time of the formation of your Association, the Executive Committee of the American Association of State Highway Officials expressed their opinion that the aims and objects of the Highways Industries Association indicated a close co-operation with the different State Highway Departments, as well as the general promotion of highway work throughout the United States.

"I am very much pleased to say that our close co-operation during the past few months has shown that this is being accomplished, and your Association cannot help becoming a very important factor in developing the highways of our country."

Association and Proposed Legislation

The connection between the Highway Industries Association and the proposed legislation originally came about through the personal solicitation of the Highway Officials themselves, and on August 5, 1918, in a meeting of the Officers and Directors of the Highway Industries Association in Lima, Ohio, it was agreed to stand behind the Highway Officials in their endeavor to secure in Federal control what they believed to be necessary for a broader and more intelligent analysis and supervision of the highway development of our country. Numerous meetings were held in Washington regarding the legislation in which some of the very Highway Officials who voted against the Resolution at Chicago participated. I do not criticise these men, because they were misled through deception and the breaking of good faith on the part of the Office of Public Roads.

The Office of Public Roads was consulted frankly and fairly in regard to the proposed legislation and they acknowledged we should have National Highways through their preparation of a bill for a Federal Highway Commission. Certain highway officials with Mr. Shirley, Secretary of the Highway Industries Association, talked over the proposed legislation with the Office of Public Roads, and it was finally and definitely agreed that the entire proposition would be presented at the Chicago meeting for consideration and approval of that meeting, at which time both the bill proposed by the Highway Officials and the Executive Committee of the Highway Industries Association and the one proposed by the Office of Public Roads would be discussed, and in the meantime nothing should be done in the way of introducing any proposed legislation covering the matter.

A few days later it was urged by some individuals who did not have faith in the Office of Public Roads, that the bill should be introduced immediately. Several meetings were held at which the Highway Industries Association took the stand that we were in honor bound along with the Highway Officials to keep a pledge, and regardless of what the Office of Public Roads might do we would keep that pledge. The result was that we went to Chicago with clean hands—open and above board—and without violating the pledges made in the matter.

Office of Public Roads Broke Pledge

Did the Office of Public Roads keep the pledge? I will leave it to any member of the Executive Committee of State Highway Officials. Many of the State Highway Officials have already said to me that they voted with the Page Resolution because he had personally pledged them before coming to the meeting to support his plan without any knowledge on their part of the agreemnets made in Washington, and also that he assured them it would be impossible to secure anything better than that which he recommended. He did not tell them that he, through the Office of Public Roads, had already acknowledged the importance and necessity of a Federal Highway Commission and a National Highway System by the preparation of the bill providing for both and above referred to.

The latter part of the article intimates that the action of the joint Congress was controlled by material and equipment representatives. It is again evident that the writer was not familiar with the make-up of the meeting, or else that he wanted to deliberately misrepresent, because as a matter of fact a large majority of those attending the meeting were delegates from Chambers of Commerce, Rotary Clubs and other organizations throughout the United States whose aim in life is to assist in making our great country a better place in which to live and for that very reason have become affiliated in the important work of the Highway Industries Association so that the highways of our country may become of real value to the country as a whole and not built simply as a matter of local convenience.

If there is any justification that the Federal control of our highways should remain a side issue under the control of the Department of Agriculture or any other department we should then say to the States that there is no justification for State Highway Departments standing alone, and separate as a department, but they should be placed under the control of their State Department of Agriculture. That no one would suggest such a plan is evident and for that very reason every State Highway Official and every business man should, and I believe will, urge a separation of Federal control of our highways through the creation of a Federal Highway Commission whose sole duty will be to study and administer the highway problems of our country from a federal standpoint and to cooperate with the states in their problems.

Regarding National Highways the remarkable thing which developed at Chicago was the fear of some few officials that if the Federal Government began to assume their obligation to the country as a whole through the construction of national highways it might discourage the states in road building and thereby endanger the existence of their own department. State Highway Departments standing on such thin ice should not exist, and I am sure that after careful reflection the same men will realize and appreciate that co-operation from a broad-minded and able Federal Highway Commission and the proper construction and maintenance of a limited mileage of highways in their states by the Federal Government, in which they would have a voice, would not only aid them greatly in their individual problems, but would create additional interest and demand for greater activity in highway work by the states themselves. It would mean that a capable state highway official would be aided in building his department to a greater importance in his own state, than without the co-operation of efficient Federal control and the influence of the Federal Government assuming their rightful obligations in highway construction and maintenance.

Object of Highway Industries Association

In attempting to carry out the aims and objects of the Highway Industries Association which are: "To assist in co-ordinating the highways with the other transportation agencies of the country; to encourage the development of highways that will advance the economic life of the nation; stimulate their use in such a manner as to facilitate and cheapen the transportation of food, raw materials and finished products, and to

co-operate with Government agencies, both State and National, to the end that our highways may be of maximum service in the transportation system of the country," we are bringing together an affiliation of not only those whose business embraces the construction of highways but also those, and in greater numbers, whose business embraces the use of the highways from every standpoint—who are the real tax payers of the country and who, as already stated, greatly predominated the Chicago meeting and therefore when they endorse in no mistaken terms a policy for a Federal Highway Commission a National System of Highways and an extension of Federal Aid to States it is simply expressing the viewpoint and feeling of the average man of affairs in the United States and certainly deserves commendation rather than condemnation. The hundreds of letters received from Chambers of Commerce, Rotary Clubs and other civic organiaztions from all parts of the United States since the Chicago meeting show a unanimous and enthusiastic endorsement of the policy suggested by the resolution adopted by the Highway Congress and the absolute assurance of support for the enactment of legislation covering the three provisions of the resolutions.

The Highway Industries Association proposes to continue to co-operate where co-operation is necessary—but where it is necessary to oppose because of inefficiency or lack of appreciation of the value of our highways and the penalty for neglect in their proper development, we shall not hesitate in doing so.

S. M. WILLIAMS,
President, Highway Industries Association.

Lima, Ohio, January 2, 1919.

Sand and Gravel Men Look for Record-Breaking Convention

Chicago Meeting January 28 and 29 to be Most Important Event in History of the Industry—New Constitution Ready

THE CONVENTION of the National Association of Sand and Gravel Producers at Chicago, January 28 and 29 will be the greatest in the association's history. There will be potent and irresistible reasons for this.

A program of such quality, such completeness and such importance, vital in present day problems, presented by authorities and specialists, has never before been offered. The committee headed by Burton H. Atwood has worked and is working hard to get together such a list of speakers as will fill every moment of the sessions with tested information and interest. The program then is the first and greatest reason for a record breaking convention.

The next is the intensified interest of the industry as a whole in the very problems to be discussed.

Freight Rate Question

The Freight Rate Question will be presented by Luther M. Walter, until recently assistant to Charles A. Prouty, Director of Division of Public Service and Accounting in the Railroad Administration. Mr. Walter is certainly qualified in every way by the position he has held to discuss railway rates. It would be difficult to find a better man for the job. His talk may be considered semi-authoritative; at least he will be able to deal in facts learned at first hand.

In this connection the Association Committee on Railway Problems, which has been investigating the matter will make its report.

"American Bolshevism" will be the subject of a talk by Prof. Graham Taylor of the Chicago Commons, who it may be justly said stands pre-eminent as an active investigator of labor problems, who is constantly in touch with the industrial situation, who has been called to Washington for a conference on labor matters and who possesses inside information regarding Bolshevism and the I. W. W.

To Boost the Industry

A constructive program of activities for the association for the year 1919 along with a budget will be presented by the Executive committee. This is really one of the great problems of the association, pregnant with great business possibilities—it is a vital item for the industry.

The Round Table discussions will come under seven heads under the general subject: "The Operations Involved in Producing a Ton of Gravel." The subjects itemized are as follows, each to be discussed by one who knows his subject: 1. Stripping. 2. Excavating. 3. Conveying. 4. Crushing. 5. Elevating. 6. Screening. 7. Loading.

At the time of going to press the following had accepted assignments: George D. Van Sciver of the De Frain Sand Co., Philadelphia, on "Elevating"; Allen Foley of the Construction Materials Co., Chicago, on "Crushing."

The matter of depletion will also be discussed.

Experts to Talk on Gravel

R. D. Salisbury, professor of Geographic Geology at the University of Chicago, will talk on "Gravel, Its Origin and Uses." He will tell where the gravel is, how it got there and features and qualities of the material.

R. C. Yeoman, Associate Professor of Highway Engineering, University of Purdue, will discuss "Gravel Roads" and will tell how to build a scientific gravel road.

Lessons from Washington

E. Guy Sutton, Secretary of the association and secretary of the War Service Committee on Mineral Aggregates, will make his report and will tell of the lessons learned at Washington.

The program is not yet completed, but this foretaste will convince all of its great value and importance.

All engaged in the industry, whether members of the association or not, are invited to attend. A new constitution on very broad lines will be proposed for adoption at this meeting.

THE CONSTITUTION

ARTICLE I.

Name

The name of this Association shall be the

NATIONAL ASSOCIATION OF SAND AND GRAVEL PRODUCERS.

ARTICLE II.

Objects

The objects of this Association shall be:

To provide an organization for the co-operation of the members and the co-ordination of their efforts with those of other Trade Associations and the Federal Government in the furtherance of all projects affecting the industry;

To promote and extend the use of the products of the industry;

To establish and to maintain the highest standards of business practices, customs and usages among its members, and to promote the interests of the industry in every legitimate way.

ARTICLE III.

Members

Section 1. Any person, firm or corporation engaged in the production and sale of sand and gravel in the United States shall be eligible to membership in this Association.

Sec. 2. Applications for membership shall be made in writing to the Secretary, pledging allegiance to the Association, and upon approval by

the Executive Committee the applicant shall be deemed a member of this Association.

ARTICLE IV.
Administration

Section 1. Executive Committee: The management of the Association shall be vested in an Executive Committee consisting of the officers and two other members of the Association, the latter of whom shall be elected at the annual meeting of the Association to serve for two years or until their successors are elected, except that the first one elected as a member of the initial Committee shall serve for one year only.

Sec. 2. Officers: The officers of the Association shall consist of a President, a Vice-President and a Treasurer who shall be elected at the annual meeting of the Association to serve for two years or until their successors are elected, except that the President elected at the annual meeting of the year 1919 shall serve for one year or until his successor is elected.

Sec. 3. Duties of Officers: The duties of the President and the Vice-President shall be those usually devolving upon such officers.

The Treasurer shall be the custodian of the funds of the Association and shall disburse the same with the approval of the Business Manager. He shall provide an indemnity bond satisfactory to the Executive Committee, the expense of which shall be paid by the Association.

Sec. 4. Business Manager: The Executive Committee shall secure the services of a Business Manager who shall actively conduct the affairs of the Association under the direction of the said Committee, and shall keep a record thereof. The Executive Committee may authorize the Business Manager to secure such facilities, assistants and services as may be necessary to carry out the purposes of the Association.

Sec. 5. Advisory Council: There shall be an advisory council, consisting of members of the Association who shall be known as Regional Advisors. The number of regions and the manner of selecting the Regional Advisors shall be determined by the Executive Committee, it being provided, however, that so far as is practicable, the Regional Advisors shall be selected by the members of the Association located within the several regions. The Regional Advisors shall co-operate with the Executive Committee and the Business Manager in the furtherance of the purposes of the Association.

Sec. 6. The President, by and with the advice and consent of the Executive Committee, may appoint such committees as may be deemed necessary to carry out the purposes of the Association.

Sec. 7. Salaries and Expenses: The compensation to be paid to the Business Manager and the members of his staff shall be determined by the Executive Committee. All officers, members of the Executive Committee and Regional Advisors shall serve without compensation. The necessary expenses incurred by the officers and members of the committees while attending regularly called committee metings, other than those which may be held at the time and place of the annual meeting, shall be paid from the funds of the Association when certified to by the Business Manager and approved by the President.

ARTICLE V.
Meetings

Section 1. There shall be at least one meeting of the Association per annum, the exact date and place to be fixed by the Executive Committee; notice of such meeting to be mailed to the members of the Association at least thirty days prior to the holding thereof.

Sec. 2. Special meetings of the Association or the Executive Committee may be called by the President at any time upon due notice.

Sec. 3. A majority of the members present at any regular or called meeting of the Association or of any Committee, shall constitute a quorum.

ARTICLE VI.
Nominations and Elections

Section 1. The President, at least thirty days before the annual meeting, shall appoint a nominating committee, consisting of three or more members of the Association.

Sec. 2. The Nominating Committee shall, at the annual convention, nominate at least one member for each office or position on the Executive Committee which is to be filled at that meeting.

Sec. 3. Any five members of the Association may make additional nominations by filing the same, in writing, with the Business Manager in sufficient time in advance of the election.

Sec. 4. The officers and members of the Executive Committee shall be elected at the annual meeting. Vacancies therein existing after the annual meeting shall be filled by the President appointing thereto a member of the Association who shall serve until the succeeding annual meeting.

ARTICLE VII.
Finances

Section 1. The Executive Committee shall propose a plan covering the activities of the Association for the ensuing year, and a budget covering the expenses incidental thereto.

Section 2. The funds of the Association shall be secured by an assessment based on tonnage, the rate of which shall be determined by the Association at the annual meeting; provided, however, that the minimum assessment to any member shall be $25.00 per annum.

Sec. 3. All assessments shall be paid as follows:—

March 1st of each year.....$25.00

July 1st of each year, the amount due at the established rate, covering the tonnage produced during the first six months of that year, less the initial payment of $25.00.

December 31st of each year, the amount due at the established rate, covering the tonnage produced during the second six months of that year.

ARTICLE VIII.
Amendments

These articles may be amended at any regular meeting of the Association by a two-thirds vote of the members present and voting; no amendment shall be considered at any meeting unless a written notice of the change proposed shall have been given to the Business Manager at least thirty days previous to such meeting, and unless written notice of such proposed change shall have been mailed to members at least fifteen days prior to such meeting.

Bureau of Standards Seeks Large Fund for Experimental Work

Director Declares $350,000 Needed for Tests of Stone, Cement and Refractories

WASHINGTON, D. C.—An appropriation of $175,000 has been asked of Congress by the Secretary of Commerce, to be used at the Bureau of Standards in its work of investigating stone, clay, cement and other structural materials.

At the same time, Director Stratton declared, before a subcommittee on appropriations, that he would appreciate an appropriation of twice that amount, as, under present conditions, his bureau was able only to do Government work, whereas he would like to undertake a "real investigation of those materials." During the current fiscal year, the bureau has an appropriation of $125,000 for this work.

An appropriation of $60,000 is also asked for the investigation of fire-resisting properties of building materials. This is an increase of $35,000 over the present appropriation of $25,000.

"The increase is caused by the demand for some tests of full size specimens, wall partitions, floors, and so on," said Dr. Stratton. "The building needs throughout the country are based upon the most unreliable data. There is a great movement in that direction and has been for many years. With the present appropriation we have been carrying on some column tests and we have gotten some excellent results from brick, cement, and steel protected columns under temperature conditions. Those programs are in progress but there is a great need for floor and partition tests, and the increase is submitted for that purpose."

Dr. Stratton declared that there has been an entire change in this industry in the last few years, and it has been necessary to develop entirely new refractories.

"For instance," said he, "take the linings of the furnaces on battleships and destroyers. Those linings have to be made of very light brick of a very high heat-resisting power.

"Another case is that of a clay aggregate for cement. If we make concrete out of ordinary cement with stone as the aggregate, it is very heavy. In many cases, as in the building of floors, and in some instances in the building of roads where stone is scarce, it is very necessary to have an aggregate which is not so heavy. They found out by burning clay very quickly that it will expand like a loaf of bread when it rises; this burned clay aggregate is quite strong. This is an entirely new development. It was developed for concrete ships, but its use in other places is far more important."

The sum of $15,000 is asked for an investigation of the effect of sea water on concrete.

U. S. Department of Labor Will Help Construction Work

New Division Created To Stimulate Building Construction of All Kinds

WASHINGTON, D. C.—A new division has been created in the Department of Labor for the purpose of interesting the nation in public works and private construction. Secretary Wilson announces that the new service will gather and distribute information that will enable private initiative to make the transition from a war to a peace basis without serious interruption, due to lack of data on which business judgment must depend.

A survey of business conditions will be made with a view to learning how labor and capital may be profitably employed during the critical period when factories are being made over for peace production and markets are being canvassed for future outputs.

The division which will carry on this work is now being organized by F. T. Miller, the publisher of construction periodicals, as a section of the Department's Information and Education Service, of which Roger W. Babson is chief. The new organization is called the Division of Public Works and Construction Development, and occupies the building at 16 Jackson Place.

The particular objective of the bureau's research will be to secure data for the use of the construction industry, but the material to be collected will be so varied that the information will be of value to industry generally. The facts made available will be of help to any community or investor in determining whether it is advisable to undertake public or private building at present. When circumstances unfavorable to construction are discovered an attempt may be made to correct them, but there will be no stimulation of economically unsound enterprise. The findings of the bureau will be given the widest publicity.

The pivotal nature of the building industry is economic reconstruction and the general purpose of the work of this division are expressed in Secretary Wilson's statement:

"Building construction will help to provide employment for returning soldiers and for workmen dismissed from war industries. One of the largest sources of prospective employment is the building trade and its allied factory industries .

"In the case of private construction, a resumption of activity will also lessen the congestion of population, improve conditions affecting the public health and convert inactive property into active property—which supplies the means that enable communities to support the functions of governments.

"During the war the nation practically concentrated all its efforts on the production of goods for immediate consumption—war materials, food, clothes. The failure to produce the normal quota of goods for future consumption has made these scarce and high priced, and as they are essential to further production they affect the cost of production and, consequently, the cost of living. Chief among such goods are building and other real estate improvements, including public works, as roads, bridges, etc. The scarcity of buildings, for example, creates high rents."

The inquiry will be under the direction of business men of wide practical experience who are serving without pay. The actual investigation will be conducted by a group of economists and special agents supplied by the Department of Labor and other Government departments or lent by universities. The field will include the cost and supply of building materials, the amount of labor available and its cost, the values of land, prevailing rents, the supply of capital, the amount of construction held up by the war and the demand for building in all parts of the country.

Under the supervision of the economics section, five other sections will prepare information for publication by the means of the press, public speakers, posters and the medium of organized labor.

Canada to Lend from $25,000,000 Fund to Private Builders

TORONTO, ONT.—A bright outlook is anticipated for the cement industry of Canada. Since the beginning of the war building operations throughout the country have been at a standstill but everything points to a resumption on a large scale.

The Dominion Government has set aside $25,000,000 for loans on buildings exclusive of government work and the province of Ontario has set aside $2,000,000. Work on the Welland canal and on municipal undertakings will be resumed without unnecessary delay.

Federal Agents Report on Business Prospects

WASHINGTON, D. C.—Building and construction throughout the country is due for a big revival between now and spring, according to reports which have been sent to Washington from the agents of the Federal Reserve Board in the various districts.

In the Boston district it is expected that the spring will see a resumption of building on a large scale. The New York agent reports that building in that district, other than Government construction, continues to be inactive. "However," he asserts, "the outlook is for increased activity. There is a fair amount of uncompleted work to be finished."

Sentiment among buildings in the Philadelphia district is particularly optimistic, as they look for a pronounced increase in activity with the removal of Government restrictions and the probable better supply of labor that is expected to follow a curtailment in Government construction.

The building in process of construction in Cleveland is confined altogether to that for industrial purposes and for the housing of workingmen, which is absolutely needed. The outlook in this industry, however, is reported as good. In the Richmond district there is a general feeling that as soon as the readjustment steps are successfully accomplished good business will follow.

The agent at Chicago reports that the building industry, which has been exceedingly dull for months, except in instances of war construction, is beginning to reflect the removal of restrictions. Business men are looking ahead and plans are being developed for a resumption of public improvement work to tide over the readjustment period and avert unemployment.

Since the signing of the armistice renewed interest in real estate, building, etc., has been manifested in the St. Louis district. Throughout the Minneapolis district there are large numbers of public enterprises, involving a great amount of city and county work, which had been deferred until a more favorable time.

Building operations in the Kansas City district continue inactive. The release of steel and cement is expected to cause a resumption of municipal construction and highway building, although the impression prevails that this class of work will be slow returning to normal.

Passed By The Screens

Incorporations

Batavia Sand Co., Batavia, N. Y. President, George E. Priest; secretary, W. A. Stetson.

Chester Granite Quarries, Hudson, N. Y. $125,000. W. A., W. S. and E. L. Harder, Philmont.

The Montgomery Marble Co., Montgomery, Ala., recently incorporated, will operate a local quarry.

Greenville Stone & Gravel Co., Memphis, Tenn. capital, $150,000. Incorporators, J. E. Holmes, P. M. Canale, John D. Moran, H. E. Heite and C. W. McDowell.

Construction Sand & Gravel Corp., Boston Mass. $50,000. Directors: S. F. Sutherland, president; R. Howard Barnes, Everett, treasurer, and F. H. Pierce.

The Vulcan Lime & Stone Co., Pittsburgh, Pa., recently organized by John R. Foster and associates, with capital of $10,000, will operate limestone and other properties in this vicinity.

Helen Coal, Lime & Lumber Co., Delaware. Capital, $100,000. To mine for coal, lime and deal in timber. Charles Tarnay, Butler, Pa.; Joseph Barna, Clarion, Pa., and John E. Klem, Pittsburgh.

Atlantic Sand & Gravel Co., Inc., of Far Rockaway, N. Y. The capital is $10,000 and the directors are Benn Rigel and Bessie Rigel of Far Rockaway and Sophie J. Hanscom of Manhattan.

Application has been made in Pennsylvania for a charter for the Flower Builders Supply Co., Farrell, Pa., by Charles Flower, R. W. Luse and V. L. Johnson, to manufacture cement and deal in building supplies.

The Michigan & Ohio Coal Mining Co. Capital, $875,000. The Corporation Trust Co., Portland, Me. To operate all kinds of mineral lands. President, David F. Drew; treasurer, Chas. W. Hamilton; clerk, A. B. Farnham; all of Portland, Me.

Watson, Frye Co., Ltd. Capital, $200,000. Ralph O. Dale, Bath, Me. To mine and quarry all kinds of metals and minerals. President and treasurer, Scott R. Frye; clerk, Ralph O. Dale; directors, Scott R. Frye, Orrin F. Frye and Margie J. Smith, all of Bath, Me.

Schist Lake Corporation. Capital, $10,000. No. 85 Exchange street, Portland, Me. Mining and operating all kinds of ores, metals and minerals. President, I. C. Dyer; treasurer, A. P. Brewer; clerk, H. P. Sweetser; directors, A. P. Brewer and I. C. Dyer, all of Portland, Me.

Johnson Coal & Ice Co., Raleigh, N. C. Capital, $25,000. Subscribers for stock: C. A. Johnson, T. W. Johnson, H. P. Watkins, Raleigh, N. C. Business: To mine and generally to deal in brick, clay, sand or other earthen products, or other similar materials or other building materials.

The Asheville Construction Co., Asheville, Buncombe County, N. C. Capital, $50,000. Subscribers for stock are, Clyde S. Reed, Biltmore, N. C., Porter A. Webb and Hugh M. McDowell, Asheville, N. C. Business: Quarrying, cutting, crushing, manufacturing and selling stone and rock.

Personals

Horace N. Trumbull, who has recently received his discharge from the Engineers Officers' Training School at Camp A. A. Humphreys, Va., has been appointed advertising manager of the Wellman-Seaver-Morgan Co., Cleveland, O. Before entering the service, Mr. Trumbull was Advertising Manager of the SKF Ball Bearing Co. of Hartford, Conn.

OBITUARY

James C. Farrell, Albany, N. Y., treasurer of the Helderberg Cement Co., a newspaper owner, capitalist and philanthropist, died December 29, 1918, at the Post-Graduate hospital, New York City, where he had undergone an operation. He was interested in several enterprises, financial and industrial.

Lime

The State Commissioner of Agriculture, Harrisburg, Pa., announces that hundreds of the abandoned lime kilns throughout the state will be fired again during the winter and spring, to provide for the great demand with the opening of the gardening season.

The Grove City Limestone Co., Grove City, Pa., has received permission from the Public Service Commission to increase its debt by $48,000, to provide for existing obligations and proposed expansion.

The plaster mill erected about 1838 by Z. Volney King & Brother at West and Horatio streets, Greenwich Village district, New York, and used continuously for the manufacture of such specialty since that time, has been purchased by Albert C. Merkle. The property consists of eight seven-story brick buildings and one two-story structure, on site totaling about 14,000 square feet.

The Limestone Products Co., Hamburg, N. J., which recently acquired the property of the Vanderhoof Lime Co., in this section, has arranged for the abandonment of the mule tramway formerly in service by the construction of a new railroad line, about 2½ miles long, extending to a point near McAfee. The new line will pass through extensive and rich limestone properties to be developed, where necessary, and operated by the company.

Cement

The Alpha Portland Cement Co., Easton, Pa., has closed down its various plants at Martins Creek, Pa., Manheim, Va., Catskill, N. Y., and Syracuse, N. Y., the first noted being the last mill to take this action. The Manheim works were closed in October, while the two New York plants were shut down in December. The company has taken this action, it is said, on account of the scarcity of current orders and large stock of cement now on hand. About 1,600 men are affected by the closing. It is expected to resume operations at the Martins Creek mill, which gives employment to about 300 men, at an early date.

The Oklahoma Portland Cement Co., Ada, Okla., is building a new unit at its plant to increase the daily capacity from 2,500 to 5,000 barrels. Considerable new machinery and equipment will be installed.

The International Portland Cement Co., 347 Madison avenue, New York, N. Y., is perfecting plans for the organization of the International Cement Corporation, under Delaware laws, with capital of $2,500,000. The present company will be merged in the new organization. The company controls the Compania Argentina de Cemento Portland, operating in the Argentine Republic, and is also interested in the Cuban Portland Cement Co., with plant now in course of erection at Sierra Bayas; the first unit of this plant has recently been completed, and is now in operation.

H. L. Doble, secretary of the Canada Cement Co., announces the usual quarterly dividend of 1½ per cent.

The Atlas Portland Cement Co. has inaugurated capacity operations at its No. 4 Mill at Northampton, Pa., being the largest plant of the company. It is said that other mills will be started up at an early date.

The Coplay Cement Co. is now operating its Mill C at capacity production and expects to continue without further interruption. The cooperage department is now working overtime to produce barrels, averaging from two to four nights each week. The company's Mill B is being improved, with repairs to machinery as required, preparatory to operation; it is not known at this time when the plant will be ready, as there is considerable overhauling work to be done.

The Lehigh Portland Cement Co., Allentown, is operating its mills at Ormrod and Fogelsville, the former plant being known as Mill D. Employes have recently been transferred to this last noted mill from the West Coplay plant of the company.

The Giant Portland Cement Co., Pennsylvania Building, Philadelphia, Pa., is offering for sale its complete cement plant. The mill is modern, with daily capacity of about 2,000 barrels, operating under the wet process.

Quarries

Slate and marble interests at Rutland, Vt., are resuming operations after a year of exceptional quietude. The prospects for continued production, with ready outlet, are good, and it is understood that a few of the plants are planning to increase present operations at an early date.

J. P. Van Derveer and associates, Clanton, Ala., have acquired about 320 acres of slate property in this section, and are planning for extensive quarry development.

The Stinson-Reeb Builders Supply Co., 45 Alexander St., Montreal, is in the market for a jaw crusher with a capacity of 200 tons or more every ten hours.

The erection of a rock-crushing plant to be operated by electricity is contemplated by the city council of St. John, Newfoundland. J. L. Sattery is the one to whom correspondence should be directed.

George D. Avery and son Omer have leased from Boydston Bros. of Porterville, Cal., the lime quarries and pulverizing plant owned by them in the foothills east of Porterville.

The farmers of the vicinity of Dallas, Ore., like those in various other parts of the state, are taking advantage of the lime from the state quarry furnished at cost.

Sixteen quarrymen struck, Dec. 30, at Trimmer's limestone quarries at Vernoy, near Califon, Pa., when their wages were reduced from $4 to $3.35 for nine hours' work, says the Easton, Pa., Free Press. They held out for $3.35 for eight hours, when they agreed to return to work Jan. 2 for $3.15 for eight hours, excepting Saturdays, when the wages will be $3.15 for seven hours.

Citizens of Indian Point, Menard county, Illinois, are organizing a stone company, limestone having been found in large quantity in the vicinity.

Nearly $1,000,000 worth of machinery, used in quarrying limestone on Johnson's island, has been removed from the island and taken to a quarry in West Virginia, says the Sandusky Star Journal (Ohio). A presentative of the Bangs Co. of New York City, which owns the quarry, came to Sandusky to consult with the railroads regarding the removal of the machinery. The two air compressors required seven cars each. The quarry has not been used for nearly five years.

The Solvay Process Co., Syracuse, N. Y., has brought action against the Lackawanna Railroad and Director General McAdoo for the sum of $59,392.06 as excess payments given for limestone carried by the road from the Jamesville quarries to the Solvay plant of the company. The company holds that the rate charged was in violation of an agreement made with the Lackawanna Railroad on Dec. 24, 1909, at a rate of 15 cents per gross ton. This rate was advanced by the Railroad Administration to 17 cents on May 6, 1918, and to 40 cents on June 25, being reduced to 30 cents per gross ton on Sept. 16.

During the last six months of 1918, a total of 6,648 tons of stone were removed by prison labor at the stone quarry, near the county penitentiary at Caldwell, N. J., bringing a revenue to the county of $9,972.

Slag

The National Slag Co., operating near Coplay, Pa., has installed two new crushers at its plant for increased capacity. The plant was idle during the month of December to allow for the installation, which will provide a greatly increased output over former operations.

The Buffalo Slag Co., Buffalo, N. Y., has completed plans for the erection of a new two-story slag crushing plant on Hamburg Turnpike, to cost about $20,000.

Potash

Consul General Hurst has cabled from Barcelona that the Spanish government has published detailed conditions for bids on concessions to work the potash beds of Catalonia. Such bids will be received from foreigners as well as Spaniards until February 14, at the Institute Geologico de Espana at Madrid.

Manufacturers

The Wellman-Seaver-Morgan Co. of Cleveland, O., has opened a San Francisco office at 415-417 Rialto Bldg., in charge of Norman S. Ross. Business originating from California, Nevada west of the 115th meridian, lower California and the counties of Josephine, Jackson and Klamath in Oregon, will be taken care of by Mr. Ross.

Gifford-Wood Co., Hudson, N. Y., has issued catalog No. 18, a 480-page book which "shows the application of labor-saving handling methods for various industries and includes data as to dimensions, capacities and power requirements which will be helpful to engineers and plant managers." The details of machinery parts are fully illustrated and tables of dimensions and prices are given. Among the subjects discussed in the book are, leather and rubber belting, elevators and conveyors, wagon loaders, screening machinery, conveyor chain, pivoted bucket carriers, chains, attachments, pulleys, power transmission machinery, engineering data, etc.

Garford Motor Truck Co. of Lima, O., announces the organization of two new departments, one of which, the Department of Highway Development, is the beginning of an important policy urged for the general good of public interests by the president of the company, E. A. Williams. The objects of the department are of the broadest kind. S. M. Williams has been appointed to head the department, the work of which will be of vital benefit to every person in the United States. J. F. Bowman of Detroit succeeds S. M. Williams as sales manager. Mr. Bowman represents the progressive element and has a wide and successful experience in organization and sales work. The second new department mentioned is the Department of Branch Supervision. T. B. Fogg has been appointed Branch Supervisor. Mr. Fogg comes from Toledo, where he has been identified in a number of successful enterprises. He has also had extensive experience with railroad and transportation problems.

Gypsum Products

The Manitoba Gypsum Co., Winnipeg, Man., will erect a plant at Hatton, Sask., for the manufacture of dehydrated sulphate of sodium, a chemical product which is of great value in the manufacture of paper and glass. There are natural deposits of sodium sulphate at Hatton.

The annual meeting of the stockholders of the United States Gypsum Company has been called for January 21 at Jersey City.

Phosphate

A portion of the works of the Albany Phosphate Co., Albany, Ga., was destroyed by fire recently with loss estimated at $15,000. It is understood that the plant will be rebuilt.

Sand and Gravel

The Morris Sand Co., Morristown, N. J., has sold a tract of property to the City Council for about $5,000.

The Lafayette Hydraulic Gravel Co., Lafayette, Ind., increased its common capital stock from $100,000 to $500,000.

The capital of the Laurentide Sand & Gravel Co., Ltd., Montreal, has been increased from $100,000 to $149,500.

Potash

The General Bond & Share Co., San Francisco, Cal., recently organized with a capital of $10,000,000, is planning for the construction of a large refinery and potash works at Searles Lake. The company has leased a tract of about 1200 acres at this locality and plans for extensive development work to a point of maximum plant capacity. W. W. Chapin is president and Herbert Schlessinger, secretary.

Retail Dealers

Interior Lumber Co., Fargo, N. D., incorporated. Capital, $25,000. Deal in lumber, coal, etc. Wm. J. Howe, H. T. Alsop, Francis Beidler, incorporators.

Loomans-Rossman Co., Waupun, Wis. Capital, $70,000. Dealers in lumber, brick, lime, cement, tile, etc. D. J. Loomans, I. J. Rossman, L. M. Loomans, all of Waupun, Wis.

Amendment to articles of incorporation: Zengen Hoffman Lumber Co., Fort Atkinson, Wis. Change of name to The Hoffman Lumber Co., dealers in building material, cement and lumber.

National Granite Co., Eau Claire, Wis. Capital, $50,000. Frank C. Magadance, Mary B. Magadance, Jos. C. Culver, Eau Claire, Wis. Wholesale and retail business in monuments, granite, marble, mausoleums, etc.

Pipkorn Fuel & Supply Co., Oshkosh, Wis., incorporated. Capital, $25,000. Retail concern handling lime, plaster, cement and other building materials. Incorporators: Homer H. Pipkorn, Lillian Pipkorn, W. H. Heideman, Oshkosh, Wis.

Incorporated, Laun Lumber & Furniture Co., Sheboygan, Wis. Capital, $100,000. J. B. Laun, Kiel, Wis., Louis Laun, Elkhart Lake, Wis., Alfred A. Raeder, Elkhart Lake, Wis. Retail furniture, lumber, cements, fuel, tile, building materials of all kinds.

Farmers' Lumber & Supply Co., Brockett, Ramsey Co., N. D., $25,000. A. J. and J. D. Gronna, Lakota, N. D.; D. W. McKenzie, H. W. Swenson and John Kyllonen, Brockett, N. D.

Franklin Mica Mfg. Co., Pierre, S. D., and Minneapolis, Minn., $250,000. To deal generally in ores and minerals. M. P. and J. R. Leak, Minneapolis, Minn., and James Sebree, Pierre, S. D.

Hough Block & Sand Co., Youngstown, Pa., with a capital of $20,000, has been incorporated by John Hough and others. Company will engage in business in the Albert Street district.

CLASSIFIED ADVERTISING

ADVERTISEMENTS in this department are for Positions Wanted, Positions Vacant, Business Opportunities, Plants for Sale, etc.

RATES: 25c per line, per insertion; minimum charge, 50c. With display of any sort, $2.50 per column inch, per insertion, check with order.

Plants for Sale

FOR SALE

CRUSHED STONE PLANT

in Central New York

Exceptional production facilities and quality of stone for fluxing and commercial purposes. Market for entire production. Labor and Material guaranteed. Address

Box 1278, care ROCK PRODUCTS

FOR SALE OR LEASE: Crushed stone quarry situated near Wilkes-Barre, Pa. Very hard green sandstone, practically equal to trap rock for road material. Quarry equipped to produce five to six hundred tons per day—has frequently run eight hundred. Ample rail facilities and an extensive market. For detailed information communicate with Arthur L. Stull, 182 S. Franklin St., Wilkes-Barre, Pa.

FOR SALE—Crushed stone plant near Wymore and Blue Springs, Neb., on Union Pacific and C., B. & Q. railroads; the quarry farthest west in Nebraska or Kansas; 40 ft. of stone; light stripping; large territory; good prospects; 67 ft. of shale under quarry bed. Ideal location for fancy brick or Portland cement plant. Address G. H. Davis, Blue Springs, Neb.

FOR SALE—110 acres finest Ohio Gray Limestone, shale, with 50 acres 4-5 foot Coal. Quillin, 7718 Hough, Cleveland, Ohio.

FOR SALE

Lime and Stone Plant. Good reasons for selling.

Lock Box 566, Elkins, W. Va.

Plants Wanted

WANTED TO BUY—Gravel pit anywhere in the State of Iowa. Address Box 1288, care ROCK PRODUCTS.

Help Wanted

WANTED—For large crushing plant, first class mechanic who thoroughly understands Gates and Austin crushing machinery. Satisfactory salary. Address Big Rock Stone & Construction Co., 111 Center Street, Little Rock, Ark.

WANTED—Capable Superintendent to take charge of established sand plant using pump and small dredge. Good future for right man. Nickle Plate Gravel Co., Erie, Pa.

WANTED—First-class quarry superintendent to handle large quarry with crushing plant in southern Ohio. Positon open February 1st. Only first-class men need apply. References required; past ability. Address Box 348, Huntington, W. Va.

WANTED—Quarry Superintendent to handle quarry and crushing plant. One who has had experience with steam shovels, well drills, blasting, and general quarry work. State experience and furnish references. Address Box 1287, care ROCK PRODUCTS.

WANTED

Man with technical knowledge and practical experience in crushing, conveying and excavating machinery, to take charge of group of Gravel Washing Plants in Illinois.

Address Box 1289, Care ROCK PRODUCTS

WANTED—Established lime company wants experienced superintendent to operate quarry and hydrate plant. Excellent opportunity for right party. Give full particulars. Address Box 1285, care of ROCK PRODUCTS.

Situations Wanted

GENERAL MANAGER OR SUPT. desires engagement where careful and efficient operation is essential to increased production. Twenty years experience in heavy operations. Proven ability. Excellent references. Address Box 1290, care ROCK PRODUCTS.

USED EQUIPMENT

ADVERTISEMENTS in this department are for the Sale and Want of Second-Hand Machinery and Equipment.

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STEAM SHOVELS
LOCOMOTIVES
LOCOMOTIVE CRANES
CARS
RAILS
HOISTING ENGINES
GRAB BUCKETS
CRUSHERS
COMPRESSORS, ETC.

Try us for honest value in dependable "used" material of this character.

WE'LL TREAT YOU RIGHT.

Wm. B. Grimshaw Co.
1048 Drexel Building
PHILADELPHIA, PA.

Dealers in "Used" but "Not Abused" Machinery

We Have for Sale

TWO ROTARY DRYERS

In first class condition
for Immediate Shipments

HENRY H. WOOD, Inc.
68 Beaver Street **New York City**

RAILS

All sections of new and second-hand, on hand for quick shipment. Also purchase old and abandoned plants for dismantling purposes.

M. K. FRANK, Pittsburgh, Pa.

FOR SALE

CRUSHERS	PULVERIZERS	GRINDERS
1—No. 21 Gates Gyratory	12—Hammer Pulverizers	1—60x84 Jaw Crusher
2—No. 12 Gates Gyratory	15—Sets Crushing Rolls	10—10x20 to 24x36 in.
1—No. 10 Gates Gyratory	35—Griffin Mills	6—Portable Jaw Plants
1—No. 10 Kennedy Gyratory	8—Ball & Tube Mills	4—Coal Crushers
1—No. 9 Gates Gyratory	2—Symons Disc Crushers	3—Tipples
3—No. 8 Gates Gyratory	15—Kent Mills	6—Ore Washers
4—No. 7 1/2 Assorted Gyratory	3—Pebble Mills	8—Channeling Machines
6—No. 6 Assorted Gyratory	3—Sturtevant Mills	Conveyors—Screens
3—No. 5 Assorted Gyratory	4—Burr Mills 3—Raymond Mills	Stripping and Loading
8—No. 4, 3 & 2 Assorted		Shovels, Cars and Cranes

J. F. DONAHOO CO. **ASK US—WE HAVE IT** **BIRMINGHAM, ALA.**

FOR SALE

ONE CRUSHER—Farrel Foundry & Machine Co., Ansonia, Conn., B-Nc-6153—size 24 in. x 36 in.—Fly Wheels & Drive Pulley 48 in. diam. 20 in. face 11 5/16 in. bore, equipped with water cooled bearings.

ONE CRUSHER—Farrel Crusher Co.—size 18 in. x 24 in.—Drive Pulley 30 in. diam. 12 in. face—8 15/16 in. bore, equipped with water cooled bearings.

Apply

York Haven Water & Power Co.
YORK HAVEN, PA.

FOR RENT OR SALE

About 3 miles 24 in. gauge portable 24 in. track, complete with curves and switches. Also cars and locomotive.

Caterpillar drag line, 60 ft. steel boom, ¾ yard dipper.

Lock Box 275, Crown Point, Ind.

Get Bulletin 250—88 Pages Bargains

ZELNICKER IN ST. LOUIS

before buying or selling

RAILS

LOCOMOTIVES CARS CRANES
Shovels Machinery Piling, Etc.

PRIVATE EQUIPMENT

18 steel cars 36 in. gauge, 2 yd., end dump. Port Huron roller, 10 ton, 3 wheel. Vertical boiler, no patches. Rand Air Compressor 12x16, steam driven. Gyratory Rock Crusher, No. 2 Gates. Climax locomotive, 36 in. gauge, 13 ton. Climax locomotive, standard gauge, 35 ton. Bell locomotive, burns oil, 7 ton, standard gauge. Holt caterpillar tractor.

D. B. STRALEY, Crown Point, Ind.

FOR SALE

Used steam drill and six brand new End Dump Steel Quarry Cars, two yard capacity, equipped to handle from either end or side. Manufactured by Austin Manufacturing Co.

THE SHERMAN NURSERY COMPANY,
Charles City, Iowa.

FOR SALE

Boiler **Engine** **Crusher**

Boiler, 70 H. P. Casey Hedges
Engine, 50 H. P. Stanwood & Gamble, Steam
No. D Acme Jaw Crusher
Above machinery is in good running condition

Write M. T. Moyer Building Material Company
Box 960, Ardmore, Okla.

FOR RENT OR SALE

2 Porter saddletank 36" gauge locomotives
10 Western 36" gauge cars, 4 yard
Locomotive 56 1/2" 12 x 14, Climax
8 Western cars, 56 1/2", 6 yard
Keystone steam shovel
Drag line, caterpillar

Lock Box 205, Crown Point, Ind.

Idle Machinery Absorbs Profits

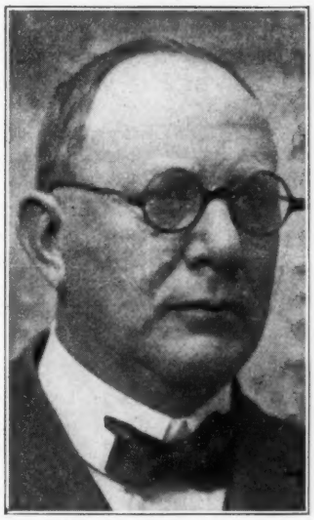
This department is the medium for the men who keep the wheels going. Sell your idle machinery to the man who'll keep it going.

To say you saw the ad in ROCK PRODUCTS gives tone to your inquiry.

Operation of Quarries and Crushing Plants

I—Introduction to Series of Articles; Immediate Prospects of the Industry; Some General Principles

By R. W. Scherer
Supt. of Quarries, Union Lime Co., Milwaukee, Wis.



R. W. SCHERER

FOR A NUMBER OF YEARS Mr. Scherer was a quarry owner and a quarry operator. He was one of the principal organizers and for several years secretary of the Wisconsin Crushed Stone Association. Since January 1 he has been Superintendent of Quarries of the Union Lime Co., Milwaukee, which operates six quarry plants.

THERE IS EVERY INDICATION that during reconstruction, as the readjustment of the nation to peace conditions has come to be called, the amount of public work that can be undertaken will be limited not by the willingness of municipalities, counties, states and the nation to appropriate moneys, nor by the ability of the railroads to carry material but by the ability of producers to furnish the basic products, and chief among these are crushed stone and cement; preparation in the industry is a patriotic duty.

Everything possible is being done to provide for the millions of men released from service with the colors and from the essential war industries, coming like a tidal wave upon the disorganized normal industries. From the war we have learned the great lesson of cooperation and sacrifice, and employers quite generally are making room for returning soldiers, often at some expense. This, at best, is only a makeshift, and we must create not places for the returning host of the country's picked men, but work, and public work will offer the only immediate relief from unemployment.

Enter a Road-Building Era

That this public work will largely take the form of road and street improvements there is little reason to doubt. Street work is what has been most seriously delayed by the exigencies of the war. The average city is a full season behind in grading, curbing and paving. Road building and maintenance were curtailed 60 per cent in 1917, 30 per cent in 1916, a shortage that, with the best efforts of the material men, can hardly be overcome in 1919.

Other activities are proposed in the scheme of reconstruction, such as irrigation, drainage and other means of reclaiming waste lands, but though deserving the whole hearted suppor of the federal authorities, these activities interest only limited areas, while the whole nation has a vital interest in roads and streets; local work must be created for local men. Lack of employment, it is to be feared, if not apparent now, will be felt before the winter is well advanced, and it will not require any more foresight in legislatures, county boards and city councils than they have received credit for, to do their utmost in providing opportunities for work as soon as the season opens.

In road building, a dozen potent influences are at work to stimulate activity. The war, for the time, postponed the effect of the enormous stimulus of federal aid. The apportionments from this source have accumulated. The big bond issues in Illinois and other states will not only lead to immediate construction in those states but, by precept, to similar issues in other states. Our soldiers returning from France will have wonderful reports of French roads to deliver; they will be an army of road boosters. An efficient means for crystallizing road building sentiment into action with federal and state authorities has been created in the Highway Industries Association. The terrific momentum imparted to the good roads movement before the war, by the press everywhere and by the organization of state highway commissions, has by no means spent itself; it has on the contrary just been dammed up and has been only augmented and strengthened

Nor is there great fear that the present prices of material will prove a serious deterrent, if indeed they should remain somewhere near the high level. During 1917 prices did not seem to have prevented much work, whether in city or country, and such action by public authorities is perfectly justified because roads as essential as those we in this country are still building are cheap at any price; a 25 per cent or even 50 per cent greater expenditure in first cost had often better be incurred than to do without the improvement for a year.

Bright Outlook for Crushed Stone

The good roads movement will go forward with ever increasing momentum and for years to come the outlook for crushed stone business from this source is a very bright one. The revival in building industries will be slower, but just as sure. Whatever prices of steel, brick, lumber, etc., will prevail, whether the present level is maintained or whether there is a substantial decline, within less than a year, they will be accepted as inevitable by big and little builders and we are a good year behind in normal building activities, two years in railroad development.

William B. Colver, chairman of the Federal Trade Commission, has said that "Truly the reconstruction is as colossal a task as was the war itself." As large a part of any immediate program of readjustment depends on the quarries and cement mills as on any other industries and the question of preparedness arises.

Far from urging preparedness on quarry operators for altruistic motives, they will be impelled to it by hope of private gain, and those quarries who find their markets mostly in road and street work will do well to size up the situation thoroughly and to take stock of their ability to supply the demand.

From all this road building activity which only another war can possibly interrupt there is one sure way to reap the benefits, and that is to supply the demand. Failing to do this in the past is what has brought forward cheaper substitutes for quarry products, and has caused the acquisition of county and municipal crushers. If there are markets where this competition has not been encountered they can be enlightened by the experience in other localitise. The county crusher, except when operated at a certain minimum distance from railroad tracks, is usually short

lived, but once set in operation makes inroads on the sales while it is in commission.

That these bright prospects in the crushed stone business are being anticipated to some extent is indicated by the large volumes of inquiries received by the machinery manufacturers for additional equipment, as well as for new installations, though only a few of the inquiries have developed into orders at this time. It behooves every quarryman to make a thorough survey of his market, taking into consideration the amount of postponed road and street work, the urgent necessity for public work, and then to prepare to the best of his ability to supply that market, to hold it and extend it, either by means of increased capacity or some practical stock-piling device.

A myriad of influences are at work to increase the demand for crushed stone for many years to come; and a myriad of causes affect the ability of each operator to supply that demand. In the course of manufacturing in the progress of the stone from ledge to railroad cars, there must be no delay at any point, each part must be sufficient for the capacity of the plant, the quarry must produce, the quarry cars must carry, and the hoist, shovels, screens, elevators must handle all that the breakers can crush or there is capacity idle and lost.

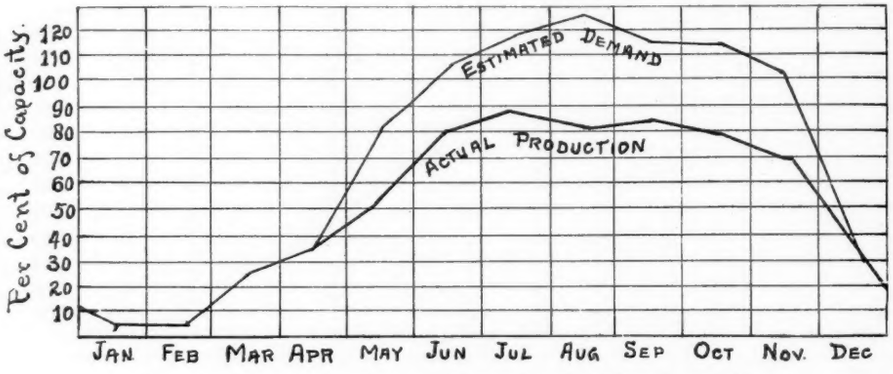


Fig. 1. Curves of estimated demand and of plant capacity

Curves of Production and Demand

In the most perfectly balanced equipment there is still an extraneous factor that causes semi-idleness, the fluctuating demand, the feast and famine in orders, that are unavoidable in a business that depends on the seasons. The production by months in one plant in a normal year has been plotted in a curve in which the elements are the months and the percentage of capacity, and on the same drawing (Fig. 1) is plotted the curve showing the demand, as carefully estimated as was possible in the territory tributary to this particular plant. The capacity is based on a month of 25 days of the best record.

The two curves visualize this aspect of the industry. The problem is to level off the top of the curve of demand, to distribute the excess to the lean months, and this is impossible, except by delays at the latter end of the season, aggravating and costly to the customer; seldom can the user be induced in the early season to anticipate his wants. It would be interesting to estimate, if it were possible, what effect this excessive fall demand, often remaining unsupplied or forced to seek substiutes, has upon the total consumption of the product. However, this much is clear, that any one plant that is compelled to refuse orders in September is discouraging inquiries in May; it is losing customers.

And the crushed stone industry as a whole has been doing this; that it has lost ground, or rather failed to develop with the growing use of concrete, is not to be wondered at, but rather that a demand from 20 to 50 per cent greater than the supply in most markets and continuing for two to four months during the year should have persisted as it has, is truly remarkable.

Again, for the sake of visualizing a fact already well known, the graph of production in the same plant is given and compared in Figure 2 with that of total costs of production, each taken from monthly totals.

In monthly operating costs, overhead expense is pro rated for each month,

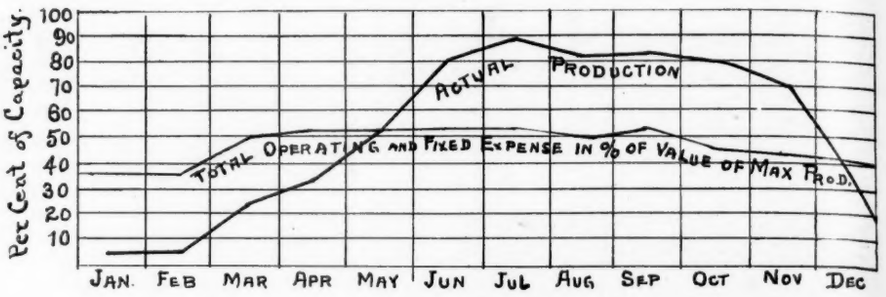


Fig. 2. Curves of total operating and fixed expense and of production

bringing January and February costs rather high. Where the production line is higher than the one for operating costs there is a profit, where it is lower there is a loss. All charges, overhead and operating, are expressed in this graph as a percentage of the value of the maximum product at average prices. The quarry is one using hand labor; in a steam-shovel operated quarry the curve would be even flatter, though there should be less difference between cost and value at the high point. Such a representation for any plant would express graphically its money-making capacity as well as the economy of steady operation and the cost of delays.

The Stock-Pile Possibilities

In preparing for the big business to come, and it will not come to the quarryman that is not prepared, the stock-pile is a possibility that should be considered besides increased capacity. It is proposed to discuss in later issues details of quarry and plant arrangement, stripping and stock-piling devices, etc., taking up a subject in each article and making comparisons of installations and their performance in different typical quarries on that one subject or detail.

One of the first discussions will be a comparison of series of crushers, their actual production in tons, the best division of work or highest ratio of reduction practicable in any one machine and how far this division of the crushing work can be carried with economy. It will be the aim to give, rather than opinions of operators, actual figures in the records of capacities, giving character and size of stone in each case, so that each operator will be able to compare them with his own records. Track arrangement, the capacities of steam shovels, etc., will be treated in the same manner and all should prove not only interesting but of practical value to progressive operators.

(To be continued.)

THE next installment is on crushers—efficiency, capacity, etc., which will be followed by a discussion of the various types of crushers and their different kinds of work.

Cement Industry of the Lehigh District

Resume of Commercial and Mechanical Development in America's Premier Rock-Products Industry

By S. H. Harrison and H. A. Schaffer
Consulting Engineers, Easton, Pa.

S. H. Harrison

MR. HARRISON is a graduate in mechanical engineering of the University of Pennsylvania. From 1898 to 1905 he was mechanical engineer and assistant superintendent of the Vulcanite Portland Cement Co. Later he was chief engineer of the Osborn Engineering Co., Cleveland, Ohio, in charge of the design and erection of portland cement plants. Since the dissolution of the firm of Harrison & Schaffer he has been chief engineer and assistant works manager of the Vulcanite Portland Cement Co.

H. A. Schaffer

MR. SCHAFFER is a graduate in chemistry of the University of Pennsylvania. From 1896 to 1904 he was chief chemist of the Vulcanite Portland Cement Co., Vulcanite, N. J. He was chief chemist and later works manager of the Northampton Portland Cement Co., Stockertown, Pa., until 1914, when he became a member of the firm of Harrison & Schaffer. During the war Mr. Schaffer served as advisory chemist and assistant to the director of the Building Materials Section of the War Industries Board.

THE PRIMARY OBJECT of these articles is to show the mechanical developments in the cement industry. The authors, however, feel that many readers of ROCK PRODUCTS may not be familiar with the early struggles attending the growth of this important industry and, as American Portland cement is now recognized as so essential an engineering and building material and occupies such a prominent place in the field of construction, the preliminary presentation of a few historical facts may be of interest.

Lehigh Valley Scene of First Production

The first commercial Portland cement ever made in the United States was in the Lehigh Valley at Coplay, Pa., by David O. Saylor in the early seventies, following several years of experimenting, in the natural cement plant of the Coplay Cement Co., which he established in 1865. Mr. Saylor is considered the pioneer of the cement industry and was ably assisted by John W. Eckert as chemist, and later on superintendent of the plant.

It is a matter of record that Thomas Millen, an Englishman, was conducting experiments in Indiana during the same period, though his plant at South Bend was not started until 1877. Saylor's product was made from an argillaceous (clayey) limestone, similar to the rock he had been burning at low temperatures, to make natural cement; Millen, of necessity, was working with white marl and blue clay, which when mechanically mixed and burned at the proper temperature, produced the same results as the Lehigh hydraulic limestone in which Nature has combined the clay constituents with the carbonate of lime.

About the same time that Saylor's efforts were meeting with success, a small works was started near Kalamazoo, Mich., according to Robert W. Lesley, to whom we are indebted for much of the information herein recorded. Mr. Lesley was also associated with Saylor in his early efforts, afterward organizing the American Cement Co. at Egypt, Pa., and occupying a most prominent part in the development of the industry.

The Kalamazoo plant, also the works, started in 1879 at Rockland, Me., and the National Cement Co., on the Hudson River, New York, were not commercial successes, owing to the high cost of labor and fuel; a plant erected at Wampum, Pa., by a Mr. Shinn in 1875 survived, along with the Coplay Cement Co., and Thomas Millen's first efforts at South Bend, Ind.

One of the principal reasons for the failure of American Portland Cement to gain favor in the early period of its manufacture, was the preference for foreign cement existing with Architects and Engineers in charge of construction; also the non uniformity of the early American product, combined with little monetary saving in its use over the foreign brands.

Some European Cement History

The history of the development of the cements of commerce in this country, is in some respects analogous to the industry in Europe; natural cement was first made in England by Joseph Parker in 1796, who calcined at low temperatures the nodules found in the Septaria geological formation in that country. Parker called his product "Roman" cement, though in reality the Roman cements were not calcined, but on the contrary, were mechanical mixtures of slaked lime and Puzzolana, a volcanic deposit.

It was not until 1824, that Portland cement was produced on a commercial scale, although General Sir William Paisley in England, and Vicat, a French engineer, both conducted scientific experiments on the production of an artificial hydraulic cement, which might equal or supersede Parker's natural cement. It remained for one Joseph Aspdin, an English bricklayer or plasterer, to take out a patent (1824) while the above mentioned experiments were still in progress, covering a high grade artificial cement. He utilized the famous chalk deposits of England, mixing with the chalk a clay from the river beds, and after calcining the dried paste to incipient fusion, grinding the resultant clinkers to powder—this powder was named Portland Cement, on account of its resemblance on hardening, to the celebrated Portland building stone of England.

Aspdin's efforts were successful at

great personal sacrifice from a scientific point of view, though discouraging otherwise, as enginers were skeptical and preferred the natural cements at higher cost to the untried artificial product. It was not until 1850 that the superior qualities of portland cement were recognized—plants were then successfully established in France, Germany, Belgium and other continental countries.

We find this bit of history relative to the production of hydraulic cements in Europe, repeating itself in this country; the natural cement industry was the first to develop, owing to the building of canals and plants were built along these great inland waterways, among which were the works at Coplay and Siegfrieds, Pa., Cumberland, Md., Balcony Falls, Va., Rosendale and Kingston, N. Y., and in the vicinity of Louisville, Ky. Their growth was rapid, owing to the demand; the product manufactured serving as a satisfactory mortar under water, and it was also successfully applied to the foundations of buildings and other structures.

Hard Struggle To Introduce Portland Cement

The advent of portland cement manufacture was different; owing to the failure of the early ventures (50 per cent of the plants had failed) it was difficult to interest capital in this new branch of the industry. It is a matter of record that the plants started in the eighties were founded on some basic patent—for instance, the American Cement Co., was launched on the strength of a patent taken out by Robert W. Lesley and associates, whereby the raw material paste was mixed with liquid hydro-carbons. Much labor and money were saved in the drying of the material, as the slurry was compressed into balls and immediately placed in the kilns.

In like manner the Atlas Portland Cement Co. was established on the patents granted to Messrs. Mathey, Navarro and Ransome, covering the calcination of the crushed rock by oil in rotary kilns.

However, architects and engineers had tried the foreign product to their satisfaction and as we look back to 1896, when the prejudice was still strong against American portland, we cannot help but realize that the former were fully justified in their position on important work.

In the year mentioned, the writers know that not a single brand was sound day in and out—the processes and methods of manufacture were such as to preclude uniformity; the raw material was coarsely ground, as well as the finished product, so that little dependence could be placed on American portland in the early years.

For the reasons cited, natural cement was prosperous and had a more rapid growth in its introductory period than portland in this country; with the increased demand for the latter in the late nineties, manufacturers were quick to adopt improved methods of handling the materials and regulating the quality of the product, with the result that in a short time, our portland equalled in strength and soundness, the best foreign brands, and its place on the market was firmly established.

Phenomenal Growth Since 1890

The growth from that time has been phenomenal, as will be seen by a study of the accompanying chart—from 200,000 barrels in 1890, the production rose by leaps and bounds, mounting to over 27,000,000 barrels in 1913.

The Lehigh District has always been the main producing center of the portland cement industry; in 1897 ,nearly 75 per cent of all the cement made in the United States, was turned out in this valley from Egypt, Pa., to Alpha and Vulcanite, N. J. At the present time the product is manufactured in all parts of the country, so that the percentage credited to the Lehigh District for the past few years, ranges from 27 to 30 per cent of the total production.

The Portland Cement Association divides the industry into thirteen geographical districts; the Lehigh, taking in eastern Pennsylvania and New Jersey, probably on account of being first in the field and having maintained its leadership in the number of barrels produced, is designated as District No. 1.

Some Pioneers of the Lehigh Valley

Before proceeding with the mechanical development of this great industry the authors feel that some mention should be made of the men who aided in its growth, whose efforts and ingenuity were responsible for the success attained in the Lehigh District.

We have already stated the prominent part taken by David O. Saylor, Robert W. Lesley, and John W. Eckert, in the early period of manufacture; Mr. Eckert, a graduate of Lehigh University, was the first chemist employed in the industry—his part in properly proportioning the mixture of rocks in the Coplay quarry, was of inestimable value to Saylor, in finally producing a commercial portland to compete with the foreign cements.

The success of the American Cement Co., was due to Messrs. Lesley and Eckert, who managed that corporation; in those days one of the principal difficulties was the grinding of the rock to powder—likewise the clinker, a very refractory, abrasive material—was a problem of economy; experiments at the works of the American Cement Co., about 1887, led to the introduction of the Griffin mill for grinding both raw material and clinker, and marked a big improvement over the old millstones then in use.

In the Atlas organiaztion, Messrs. Navarro, and Giron were conspicuous for their untiring, energetic experiments with the rotary kiln, which were eventually successful after the introduction of powdered raw material, having at first attempted the burning of crushed rock in these kilns. J. Rogers Maxwell deserves mention for the financial aid in these experiments, together with the adoption of pulverized coal later on for

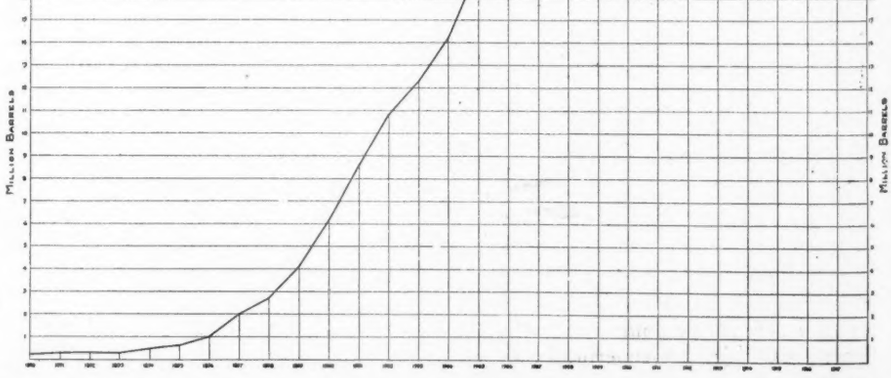


Chart showing growth of production of portland cement in the Lehigh District beginning with 1890. Peak reached in 1913.

fuel in place of oil, which was worked out and patented by Messrs. Hurry and Seaman of the same company. The prominent part taken by the Atlas Portland Cement Co. in the early development of the industry, is readily seen as the application of the rotary kiln, together with the substitution of powdered coal for crude oil as fuel, which have proven great contributions to the economical manufacture of the product, especially since modifications of the original are in practical use to-day.

In consequence of the achievements and energy of the above mentioned individuals, the Atlas company grew to enormous proportions and was soon considered the world's largest producer of portland cement.

Much credit is due the elder Bonneville for his part in the expansion of the Lehigh District; he not only established his own plant at Siegfrieds, but is the man who discovered that the supposed slate four miles east of Phillipsburg, N. J., was the same cement rock which they were using at Coplay, Egypt and Siegfrieds, and was instrumental in establishing the original works at Whittaker, now known as Alpha, N. J.

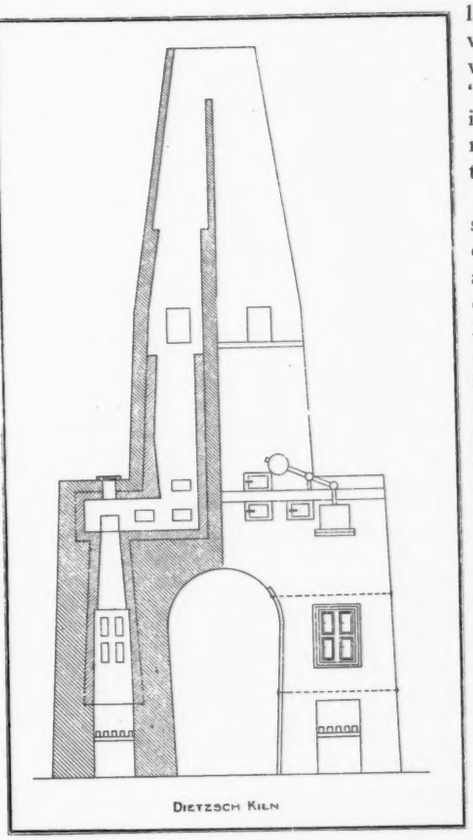
Thomas Whittaker's first efforts in 1892, were the foundation upon which the large organiation of the Alpha Portland Cement Co. was afterwards built; however, it was not until Philadelphia interests were superseded by Pittsburgh capital, headed by Charles E. Pope and William McKelvey, that the Alpha Company became a big factor in the production of portland cement.

Under the management of the late A. F. Gerstell, assisted by his able successor in office, G. S. Brown, this corporation acquired two valuable properties at Martins Creek, Pa., and thus became one of the largest producers in the territory.

Bonneville was the principal factor in enlisting capital in the Vulcanite Portland Cement Co., in 1894, in New Jersey, four miles east of Phillipsburg; the success of the latter concern is directly attributable to John B. Lober, president, and W. R. Dunn, manager, both of whom have been with the company from its inception and devoted much time to the advancement of the industry as a whole. Mr. Lober was one of the first presidents of the Portland Cement Association and his efforts in the early establishment of this important body have done much to advance the growth of the portland cement industry not only in the Lehigh Valley but throughout the entire country.

Messrs. Ernest R. Ackerman, and Charles A. Porter, of the Lawrence Portland Cement Co., at Siegfrieds, are pioneers of the early nineties, and have added much to the progress of portland cement in the Lehigh section.

The late Charles A. Matcham, who was originally associated with Thomas Whittaker in New Jersey, was a big factor in the development of the industry. Upon leaving the Alpha company, he succeeded in organizing the Lehigh Portland Cement Co., enlisting such men as Col. Harry Trexler, Col. E. M. Young, and George Ormrod. In 1898 their first plant was started; it was so successful that several other plants followed within a short period of years, until to-day the



The predecessor of the American rotary cement kiln.

Lehigh corporation owns fourteen plants, so geographically located that their brand of cement is distributed to most of the leading markets of the entire country.

The Whitehall Portland Cement Co., at Cementon, Pa., also started at this period and contributed to the output very materially; the real success of this company, however, dates from 1911, when it was reorganized under the leadership of Wm. H. Harding.

Edison Enters Cement Inlustry

The Edison Portland Cement Co., also commenced to build their plant about 1898 at New Village, N. J. Thomas A. Edison startled the cement fraternity by his radical departure from the then recognized standard methods and machinery.

The whole process of manufacture at the start, aside from the raw materials employed, was different from every other mill in the Lehigh District; instead of gyratory crushers, mammoth rolls were installed, from which the large rock was still further crushed after passing through several smaller pairs of rolls. This method of reduction was successful and is used in many large rock-crushing plants to-day. The fine grinding was also accomplished with small rolls instead of pulverizers, being separated from the coarse by means of air, while the tailings were returned to the rolls. Too large a percentage of coarse material was returned and rehandled in this way, which combined with the fact that the "fines" were crushed, instead of pulverized, led to the introduction of grinding mills some years later, similar in type to those used by many other manufacturers.

Mr. Edison's rotary kiln, however, deserves special mention. Up to 1898 the cement companies were using kilns 40 and then 60 ft. long, with an average diameter of 5 ft. at the stack end and 5 ft. 6 in. at the discharge end; the Edison kilns 9 ft. diameter by 150 ft. in length, so greatly increased the output. with a much less consumption of coal per barrel of cement, that other manufacturers quickly recognized the advantage of the large rotary kiln and soon began to install same.

Along about the time we have been describing, the first plant in the Nazareth-Bath section was built, the Nazareth Cement Co., followed closely by the Dexter, Phoenix, Northampton, Pennsylvania, Penn Allen, and Bath Portland companies. The works of the Allentown Portland Cement Co., at Evansville, Pa., was started many years later, while the most recent acquisition to the Lehigh territory is the Hercules Cement Corporation at Stockertown, Pa., originally built by the Atlantic Portland Cement Co., in 1907-08, but not placed in operation until 1917.

The next installment of this article will describe the mechanical developments which made the present quantity production possible.—The Editor.

Congress Considering Half-Billion Dollar Road Program

WASHINGTON, D. C.—Prompt action by Congress on the $500,000,000 good roads program now before it will make available for use this year $75,000,000, with the assistance of which the various States would be enabled to build 34,000 miles of highway, provided the necessary labor could be secured. That these roads are urgently needed is fully realized by Congress, which has had before it many complaints regarding the manner in which the Army truck trains have torn up the highways.

Trade Associations and the Sherman Law

Some Limitations of Their Activities Under Existing Federal Regulations

IF TWO CHICAGO manufacturers meet at their club or on the street, and agree that one shall not sell any goods in Ohio, and the other none in Indiana, they are liable to fine and imprisonment under the Sherman anti-trust law. Or if two Cleveland business men agree that neither of them shall handle a certain Chicago product, they too are violating the Sherman law.

Section 1 of that law reads, in part: "Every combination * * * or conspiracy in restraint of trade or commerce among the several states * * * is hereby declared to be illegal." The agreements mentioned above come under the law, as the courts have interpreted it. In the celebrated Merger case, Justice Harlan said that the law "declares to be illegal every contract, combination or conspiracy in whatever form, or whatever nature, and whoever may be the parties to it, which directly or necessarily operates in restraint of trade or commerce among the several states. * * * Combinations even among private manufacturers or dealers whereby interstate or international commerce is restrained are equally embraced by the act."

Rests on Interpretation of "Restraint"

This being the law, what is an association of manufacturers or other business men allowed to do? What means can they take to further their business that will not render them liable to fine and imprisonment for violating the Sherman law?

The key word in the law is "restraint." The courts have again and again said that the aim of the act is to secure "free competition," which is supposed to be necessary to fair business. In the Merger case mentioned above the court used these words: "The natural effect of competition is to increase commerce, and an agreement whose direct effect is to prevent that play of competition restrains instead of promoting trade and commerce." Again in the same decision these words are used: "To vitiate a combination such as the act of Congress condemns * * * it is only essential to show that by its necessary operation it tends * * * to deprive the public of the advantages that flow from free competition."

However, it is the actual results, and not the avowed intent of the individual or the association which is considered by the courts. In another important case the court held "that the question of intent was not material. If the necessary, direct and immediate effect of such contracts be to violate the act of Congress, and also to restrain and regulate commerce, it is manifestly immaterial whether the design to so regulate was or was not in existence when the contract was entered into."

It is no defense to say that the acts complained of are lawful. If the result of the acts is to restrain commerce, each of them may constitute a violation of the law. "A series of acts, each of which may be innocent in itself, may be wrongful if the direct object, purpose and result thereof be to carry into effect a combination whereby the free flow of commerce between the states is obstructed."

Nor can the penalties of the law be evaded on the plea of good motives. "Purpose or motive is of no moment provided the contract or agreement directly provided for the suppression of competition, or when such a result as a matter of law must necessarily occur."

Competition Must Be Preserved

So long as competition is not interfered with, however, the members of an association are free, both individually and collectively, to take any action which will promote their interests. "There is a distinction between combinations and agreements that are entered into with the legitimate purpose of reasonably forwarding personal interest and developing trade, and those that give rise to the inference or presumption that they had been entered into with intent to do wrong to the general public, and to limit the right of individuals, thus restraining the free flow of commerce and tending to bring about the evils such as the enhancement of prices, which were considered to be against public policy."

It is clear that there must be no attempt to "fix prices," or to limit in any way the prices at which any member of the association shall sell his goods. "The right of each competitor to fix prices of commodities which he offers for sale, and to dictate the terms upon which he will dispose of them, is indispensable to the very existence of competition.

And there must be no restraint of trade, in the sense that anyone is forbidden to sell to any possible customer. The courts have used the words "restraint and regulate" as meaning the same thing. It is no defense that as much goods is sold under the restriction as was sold before; if any given individual is prevented by his own agreement, or by order of any association to which he belongs, to sell to any possible customer, trade is restrained within the meaning of the act.

A man still has the right to refuse to sell to a given customer; but he cannot delegate to another the right to tell him to refuse; nor may he refuse because he has agreed with another person not to sell. As an individual, he may regulate his business as he pleases; but he may not have it regulated through a trade association, nor may he agree with any other person to regulate it in a given manner.

The following statement by Justice Peckham is perhaps the best presentation of the matter: "Where the subject matter of the agreement does not directly relate to and act upon and embrace interstate commerce, and where the undisputed facts clearly show that the purpose of the agreement was not to regulate, obstruct or restrain that commerce, but that it was entered into with the object of properly and fairly regulating the transaction of the business in which the parties to the agreement were engaged, such agreement will be upheld as not within the statute, where it can be seen that the character and terms of the agreement are well calculated to attain the purpose for which it was formed, and where the effect of its formation and enforcement upon interstate trade or commerce is in any event but indirect and incidental and not its purpose or object."

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October Exports of Sand and Gravel

EXPORTS of sand and gravel during the month of October, from figures now available, show a low total of only $121. Of this amount the French West Indies received $54, Cuba $60 and Danish West Indies, $7.

Lime and Cement Imports No Longer Restricted

WASHINGTON, D. C.—The War Trade Board has announced the removal of a number of commodities from the lists of restricted imports, among them lime and cement for building purposes. Licenses will be issued freely, when applications are otherwise in order, for the importation of these commodities when shipped from any primary or overseas market on or after January 1.

Future of Potash Production as a Rock Products Industry*

Bureau of Mines Investigator Thinks Government Should Encourage Cement Plant Installations—Production from Silicates Also Will Probably Survive European Competition

By A. W. Stockett
U. S. BUREAU OF MINES

THE NORMAL REQUIREMENTS of the country are 250,000 tons of K_2O per year. The total production for 1917 was 32,573 tons of K_2O. The present principal sources of supply are natural brines, kelp, molasses residue, alunite, and dust from cement kilns. The most promising sources of a permanent supply sufficient for all future requirements are the natural brines from Searles Lake, and dust from blast-furnaces and cement kilns, with favorable prospects from the green sand deposits.

Alunite Deposits Too Remote

The only deposits of alunite being worked on a commercial scale at present are near Marysvale, Utah. As delivered at the mill of the Minerals Products Corporation, the principal producer, the alunite contains about 9 per cent K_2O. This mill was destroyed by fire, but has been rebuilt, and is now said to be producing 20 tons a day of 97 per cent potassium sulphate. The alunite is crushed to a size of about 1 in., and roasted in a rotary kiln, 7½ ft. by 135 ft., pulverized coal being used as fuel. Then the calcined material is leached with hot water in a closed tank at a temperature equivalent to a steam pressure of 60 lbs., the potassium sulphate going into solution. The solution goes through a filter press; the clear filtrate is evaporated in triple-effect evaporators; and the resulting crystals are passed through a centrifuge and sacked for shipment.

One of the large fertilizer manufacturers says this potassium sulphate is superior to the German product and is free from chlorine.

The capacity of the plant is 30 tons of potassium sulphate per day, probably equivalent to a little over 15 tons of K_2O. At present no use is being made of the alumina remaining after leaching the potash. No estimate of the cost of production is available, but the minimum freight rate on a high-grade potassium sulphate to eastern points would probably amount to 25 cents a unit of K_2O, so that unless the alumina can be utilized, the plant probably cannot be operated at a profit under normal conditions.

Calcined alunite, containing 16 per cent of K_2O, is also being marketed for use in manufacturing fertilizers, as experiment has shown that this is as effective per unit of K_2O as the soluble sulphate and chloride salts. However, when normal prices prevail again calcined alunite, with its comparatively low content of K_2O, can probably not compete successfully with other potash-bearing products because of the high cost of transportation.

Dust from Cement Works

The first cement plant to recover potash from the kiln dust was that of the Riverside Portland Cement Co., in California. Owing to litigation with nearby fruit growers who claimed that the fine dust escaping from the kilns was causing damage to the fruit trees, the company was compelled to install an electrical dust precipitating plant to abate the alleged nuisance. Analysis of the dust thus collected showed that it contained about 10 per cent K_2O. The dust collector was completed early in 1913 and has been continuously and successfully in use ever since. What was originally considered an additional expense in the manufacture of cement has proved to be a highly profitable by-product.

Another plant is successfully using the same method at Security, Md., and both electrical precipitation and other methods of collecting dust are being used at different plants. A point in favor of dust collection is that no change in present methods of manufacturing cement is involved, and at one plant, the installation has led to a reduction of 10 per cent in fuel consumption, owing to the more careful attention required in burning the cement.

An investigation recently completed by the Bureau of Soils indicated that the probable maximum amount of potash that might be recovered from all the cement works in the country would be 100,000 tons of K_2O per year. It is not likely that dust-collecting plants will ever be installed at all cement works, but it seems reasonable to expect that the amount of K_2O to be derived from this source should reach 50,000 tons a year, or 20 per cent of the total normal requirements. Probably this amount could be increased somewhat by using, where available, rock containing more K_2O in the raw mix.

An objection raised to cement-kiln dust as a source of potash in manufacturing fertilizers is that if used in large quantities the lime content will cause reversion of the soluble phosphoric acid in the phosphate and loss of the ammonia in ammonium sulphate. The K_2O content of cement-kiln dust is also too low to permit its use as the only source of potash in a fertilizer that is to contain more than 3 per cent of K_2O. However, these objections can easily be overcome, and some potassium sulphate containing 40 per cent of K_2O is now being marketed by one of the cement works.

Thus the cement industry, especially in view of its geographical situation, seems one of the most promising sources of a permanent American supply of potash, and the Government should offer every possible encouragement to install plants for the recovery of potash, especially in cement works east of the Mississippi, as more than 90 per cent of the commercial fertilizer used in the United States is consumed in that area.

Feldspar and Other Silicates

Owing to their wide occurrence, the potash-rich silicates have long been regarded as a potential source of potash, and more than one hundred patents have been issued for various methods of extracting the potash from such rocks. Up to the present, however, such extraction seems to have been done commercially by only a few companies.

The American Potash Corporation has a plant at Jones Point, N. Y., that is treating glauconite, or greensand, containing 6 to 7 per cent of K_2O. Finely ground greensand is digested with lime and water in large autoclaves, that are heated by introducing high-pressure steam in sufficient quantity to maintain a pressure of about 225 pounds for a period of two to four hours. The liquid is filtered out, and the potash recovered by concentration as potassium hydrate. Either the chloride or the carbonate can also be made at little additional cost.

The residue from the filter press is suitable for use as agricultural lime, or, incorporated with high-silica sand, may be used as a binding material, in the manufacture of steam-hardened brick, which are claimed to be much superior to the ordinary sandlime brick, and have greatly exceeded the requirements of the Building Department of New York City.

The Atlantic Potash Co. is also using

* Extracts from War Minerals Investigation Series, No. 2, Bureau of Mines, Washington, D. C.

greensand in an experimental plant of commercial size at Stockertown, Pa., and is regularly turning out potassium chloride 92 to 94 per cent pure. The greensand is heated with calcium chloride in a rotary kiln and the mixture is then leached and the potash obtained by evaporation.

As the deposits of greensand containing K_2O in payable quantities are extensive and well situated geographically with reference to the centers of demand for fertilizers such deposits may be considered a fairly promising source of supply for a considerable period.

Experiments are being made by the Bureau of Mines with tailings from the gold mines in the Cripple Creek district of Colorado. There are several million tons of tailings, some of which run as high as 13 per cent of K_2O, and the average would probably be about 10 per cent of K_2O. The tailings are already finely ground, and are close to transportation and supplies, and if any commercially successful method of extracting the potash could be developed, would furnish a material addition to the supply of potash for several years.

The leucite-bearing rocks of Wyoming are rich in potash, and offer a promising source of supply when a satisfactory method of extracting the potash has been developed. Unfortunately the geographic situation is bad, as the main demand for fertilizer is in the Atlantic Coast States.

The recently discovered slates near Cartersville, Ga., also appear promising. These cover an extensive area; large deposits containing 7 to 8 per cent of K_2O are available. They could be mined cheaply, and are favorably situated geographically, as probably one-half of the total fertilizer manufactured in the United States is consumed within a radius of 300 miles of Atlanta, Ga.

How Much Agricultural Lime Should Be Used?

Expert Says Two Per Cent of Top Soil Is Not Too Much—A Lime Country Is a Rich Country

WHAT CONSTITUTES a limestone soil? Or in other words, what makes a limestone country? Bulletin No. 245 of the North Carolina Department of Agriculture, recently issued, answers this question in a valuable contribution on the "Relation of Pulverized Limestone to Crop Production in North Carolina," from which the following quotations are made:

"Hilgard defines a soil as a limestone soil when it supports a limestone vegetation—among trees, such hard woods as the oaks, dogwoods, hickorys, hackberries, locusts, walnuts, cedars, etc.; among cultivated plants, the clovers, alfalfa, peas, and some of the grasses.

"Ten tons of limestone to the acre would add enough lime to make 1 per cent of lime in the first 6 inches, and would, in most cases, for all practical purposes, give rise to a limestone soil. But a soil can be made sufficiently calcareous for ordinary purposes with much less limestone to the acre. Indeed, one ton to the acre, on the average upland soil in North Carolina, generally gives results comparable to those from a typically limestone land, but the application must be repeated with greater frequency, say once in every one or two years.

"We hear frequent remarks on the superiority of European to American agriculture. However, few of us know that this superiority is based largely on the vastly greater abundance of lime carbonate in European soils. These soils are, generally speaking, limestone soils, while America has but limited soil areas, and North Carolina none, that can be termed calcareous. To be sure, the Mississippi Valley and some of the gulf states, following the general outline of the cretaceous geological formation, have highly calcareous soils, and here it is that the richest lands of the United States occur, but the vast majority of the land surface of our country would be classed by European agriculturists as noncalcareous.

A calcareous or limestone soil in Europe must contain at least 2 per cent (20 tons) of lime carbonate in the first 6 inches, and some insist on 5 per cent (50 tons) to make a soil typically limestone. In Europe limesand is a normal ingredient of soils. Its presence is the rule; its absence the exception.

Soils as poor in lime as the long-leaved and short-leaved pine regions of the United States are, in Europe, very exceptional and have long remained almost uncultivated. Calcareous soils being the rule in the regions of intense culture, the ideas of both agriculturists and agricultural chamists have, in Europe, in the main, been based upon them as normal soils.

England, France, and Belgium and most of Western Europe are rich countries largely owing to their limestone formations, may be questioned whether had this been otherwise England would so long have remained the center of civilization; for starved populations are not a good substratum for high mental culture and progress. In this connection, the proper distinction between calcareous and noncalcareous soils passes from the domain of natural science to that of the history of human civilization."

Ballast vs. Commercial Prices

SHOULD RAILWAY BALLAST be sold at a price 25 cents below the current prices charged for the same product to the commercial trade? Two crusher men, both doing a considerable volume of business in each line, were overheard discussing this question. One took the position that a large purchaser like a railroad was entitled to this much concession in price as compared to the average commercial trade, for it centralized and simplified the matter of sales and collections, and furnished a sort of bread and meat dependability for operations.

The other man, while conceding in the main the weight of this argument, contended that railway ballast should by rights carry the same price as the commercial trade, and instead of a lower price be given priority all around. In other words, the needs of the railroad should be served first, and he figured that a proper rendering of this service would be an offset favor to the railroad's largeness of order and dependability.

It may well be recalled in this connection that some argument of this kind came up about the railroads and their coal in which the Fuel Administration won out over the Railway Administration. This establishes a sort of precedent, but it will not be an easy one to follow, for fuel needs at that time made a different situation from what generally exists in the matter of ballast needs. It is easily evident that too much railway ballast has been sold at too low a price, and that the trade should have a fair profit from this business, but it is not so easy to see how the full measure of commercial prices can be obtained from the railroads.

California County Votes $1,250,000 for Roads

MERCED, Cal.—In spite of war conditions there has been an insistent demand for road improvement in the western part of this Merced county and as early as last May a delegation appeared before the Board of Supervisors demanding that the proposition for road betterment be submitted to the people for a vote. The Supervisors decided to place the question before the people at the November election. Early in October the Merced Good Roads Association was organized.

Owing to the influenza epidemic only one public meeting was attempted. At this meeting Highway Commissioner C. F. Stern spoke. The "Merced Evening Sun" issued a special edition devoted to good roads. The result of the campaign was that $1,250,000 was voted for a permanent road system.

Increasing the Sale of Agricultural Lime by Advertising

The Kind of Advertising That Counts And the Mediums to Use—Based on a Study of Farmer Psychology

By John H. Voorhees
New York State College of Agriculture, Cornell University, Ithaca, N. Y.

IF THE SALE of agricultural lime is to increase and ultimately meet the need which good farming and maximum crop production require, then greater force must be spent and greater energy used to bring the manufacturer and farmer in closer touch. It is at the same time of advantage that there be a clear understanding and common ground between them. There is no evidence to prove conclusively that such a condition exists.

That the manufacturer may enter the field of educational work and through a broad and open-minded policy be a force in this field is a fact long recognized. One has only to point to the efforts of the fertilizer industry, explosives industry, farm implement industry, and numerous others. Perhaps the implement industry is outstanding at this time in its endeavor to introduce the farm tractor which is of no greater importance, if as great, generally, as the use of lime.

Food Production Propaganda

This is an age of campaigns and the following winter will undoubtedly witness one of the greatest campaigns for increased food production ever launched. The manufacture of lime, its production, and the consumption of it by farmers goes hand in hand with food production. If the sales of agricultural lime are to be increased a parallel campaign will keep the industry afore of the times. Such a campaign involves largely the various mediums of advertising, because advertising is the most efficient means of bringing the interested parties together.

From the manufacturers' point of view, farmers may be divided into three classes; first, those who use lime regularly; second, those who use lime spasmodically, and third, those who use no lime. The manufacturer is more particularly interested in the last two classes because they represent a greater potential demand indicated by the small sales of lime in comparison with the amount of lime needed for maximum crop production. It should, therefore, be the endeavor of the manufacturer to influence the casual user of lime to make its use a regular practice, and to influence the farmer who uses no lime to begin the practice in one way or another. This may be partly accomplished by educational advertising.

There are two fundamental reasons why such farmers exist, first, because he has not been sufficiently convinced that it is an efficient and profitable means of increasing soil fertility and increasing crop yields; and second, because he has insufficient capital or because he has not been educated to use what capital he has efficiently. Hence, advertising must be educational along these lines and it must at the same time be forceful, lucid, and couched in terms capable of bringing the facts home to the farmer. There must, however, be no diminution of sales to the regular users of lime because they are quite generally the most progressive men who naturally fall into the leadership class. For this reason quality and guarantees must be kept before the public to maintain a constant flow through this channel and to sharpen competition.

Advertising Mediums

The avenues of approach in the field of advertising are numerous. The most important include some which are little used. They are (1) local newspapers, (2) agricultural journals, (3) agricultural colleges and experiment stations, (4) circulars and pamphlets of information and (5) posters. A knowledge of the limitations of each is pertinent because the law of diminishing returns applies quite as well to advertising as it does to all other matters of business.

The local paper containing items of personal interest is read and studied by the people on the land more than any other publication. The classified columns are closely followed and may be used to advantage by manufacturers but advertising in such columns must not be allowed to become stale or time worn. Periodical installments and distinctive changes are pertinent.

The agricultural journal has a wider distribution less restricted to area. Farmers may be found in New York and adjoining states who swear by the "Pennsylvania Farmer," "Rural Life," the "American Agriculturist," and the "Rural New Yorker." To the farm journal must be given the credit for much free publicity through its reading columns and encouragement by paid advertisements should be accorded them. Certainly it can do no harm.

Agricultural colleges and experiment stations are undoubtedly doing their share. The manufacturers of lime owe to them their moral support, which may be expressed by insistence upon greater state and federal appropriations to enlarge the work. It is for the express purpose of broadening the knowledge on soil fertility by investigation and for the education of the farmer by the knowledge obtained. In this connection many circulars and pamphlets are issued and distributed among farmers to inform them of the efficient use of lime.

It would appear at first glance that the same type of literature prepared and distributed by manufacturers would be a duplication of effort in spite of the fact that it is prepared from the manufacturers' point of view. This is untrue because the dealer who may well be the distributor of such literature reaches many who do not come into contact with their state colleges or even their county agents. And further, there are many who read small terse circulars secured from dealers in preference to farm journals or college and experiment station literature.

Poster Advertising Effective

The poster is long famed for facts of political significance, or the lack of it, but their use has not become obsolete. The Food Administration, the U. S. Department of Agriculture, the Farm Bureau and many other Governmental agencies have recently recognized the value of such advertising. To-day it is not uncommon to be confronted by such publicity from the lobby of the country hotel, the drug store window to the most remote corner of the backwoods. It is a perfectly logical procedure and a method fraught with results because the farmer knows the way to town well, notices every new object and is not averse to being reminded of the errands he should attend to or the requirements of his land.

Such advertising utilizing all possible channels, laid out intelligently with the proper motive and artistic arrangement, and conducted vigorously by all companies as well as by a central body having no selfish interest may be expected to yield results far in excess of the normal average increase.

ACCORDING to the officials of the Lime Association, some of the best publicity agricultural lime ever got was the report of the Agricultural Advisory Committee last August (ROCK PRODUCTS, Aug. 28).

Great Growth of the Agricultural Limestone Industry

EVEN THE CEMENT INDUSTRY in its palmiest days cannot show a parallel to the increase in agricultural limestone industry in the six years 1911 to 1916,, in which statistics have first been kept by the U. S. Geological Survey. As the accompanying table shows, this gain has been 512 per cent in quantity and 460 per cent in value in these six years. The figures for 1916 do not include pulverized marl, about 35,000 tons of which were reported in 1916.

It is doubtful if these figures include many thousands of tons quarried, crushed and pulverized by farmers for their own or neighbors' use.

The table also gives an interesting comparison with the production of agricultural lime during the same period. Lime, according to this table, decreased in quantity in 1915 and 1916, although its value increased in both years. As this lime (613,564 tons) was equivalent to 1,158,000 tons of limestone, the total quantity of limestone used for agriculture in 1916 was about 2,224,000 tons.

Lime and pulverized limestone produce for use in agriculture, 1911–1916.

Year.	Lime.		Limestone.	
	Quantity (short tons).	Value.	Quantity (short tons).	Value.
1911	596,664	$1,714,386	174,290	$205,006
1912	604,607	1,852,530	200,000	311,702
1913	590,229	1,798,566	408,627	493,718
1914	684,348	2,139,444	615,197	688,961
1915	673,260	2,163,874	810,399	893,530
1916	613,564	2,224,058	1,066,376	1,146,582
Average price per ton				1.08
Increase or decrease (per cent)	−8.9	+2.8	+31.6	+28.3

Ground limestone sold for agricultural purposes in 1916.

State.	Quantity (short tons).	Value.	State.	Quantity (short tons).	Value.
Alabama	(a)	(a)	New York	102,608	$164,237
Arkansas	(a)	(a)	North Carolina	53,532	77,101
California	5,602	$8,188	Ohio	55,236	54,591
Connecticut	(a)	(a)	Oklahoma	(a)	(a)
Georgia	(a)	(a)	Oregon	(a)	(a)
Hawaii	(a)	(a)	Pennsylvania	73,301	129,574
Illinois	203,829	135,908	Rhode Island	(a)	(a)
Indiana	39,596	32,588	Tennessee	66,854	64,910
Iowa	17,526	9,630	Texas	(a)	(a)
Kansas	1,870	1,448	Vermont	27,489	54,535
Kentucky	34,645	35,851	Virginia	146,703	106,166
Louisiana	(a)	(a)	Washington	1,881	5,282
Maryland	(a)	(a)	West Virginia	47,709	74,865
Massachusetts	(a)	(a)	Wisconsin	11,920	10,360
Michigan	30,543	11,088	Undistributed	108,724	126,526
Minnesota	1,412	835			
Missouri	5,946	6,063		1,066,376	1,146,582
New Jersey	(a)	(a)			

a Included in "Undistributed."

Screening Experience With Agricultural Limestone

Kentucky Producers Give Experience

THERE ARE at least two or three broad phases of the subject of screening agricultural lime, so that while some general features of screen work apply to all, there are other features applicable to individual phases. There is the screening out of dust and small stuff from ballast and road material crushing; there is the question of screening and not screening the product from pulverizers. Then aside from both these there is the question of whether or not the agricultural product should be screened into finer and coarser grades.

F. W. Katterjohn, of Paducah, Ky., who has become an agricultural lime enthusiast, says that he is using a hammer type pulverizer to work the smaller products from his crusher into agricultural lime. From the pulverizer he lets the product run right into the bins without screening, it being automatically screened from ⅜ down by the grate bars in the pulverizer.

In contrast to this, W. J. Sparks, of Mount Vernon, Ky., who also uses a hammer type of pulverizer, though of different make, takes the grate bars out of the pulverizer and runs the product through a rotary screen. He says that by doing this he has been able to increase his capacity about 50 per cent and he eliminates the wearing and consequent adjusting of the bars in the pulverizer. The coarser stock from the screen returns to the pulveriezr so that eventually it is all worked through the screen.

In the work of screening Mr. Sparks has developed an idea that should be equally applicable whether one is screening direct from a crusher, or from a pulverizer. He has a rotary screen made of 3/1-in. sheet steel with long hole perforations running in the direction of rotation. The screen holes are 5/16 x ¾ in., and he finds this gives splendid results in getting out agricultural limestone. He considers it better than either wire screen or round perforations, for the elongated holes make for freer passage of stock. This he says is especially noticeable after a rain or when working damp stone; for damp stone has a tendency to clog up round holes, whereas it passes freely through those he uses. In short, he thinks that 5/16 x ¾ in. about the ideal for screening agricultural limestone of a fineness grading from ⅜-in. down.

In the matter of screening and separating agricultural lime into different grades of fineness to accommodate the different ideas prevailing among users sentiment seems to be crystallizing in Kentucky to favor a product in which is included everything from ⅜-in. down. It is argued that the finer portion will take immediate effect and that in time the process of disintegration of the larger particles will automatically supply the needs of the soil in future years. Following this plan and using more per acre at the one time spreading, say four tons, it is argued that the farmer saves work as compared to using finer stuff and having to replenish oftener. In other words, one heavy treatment should be good for about seven years, whereas if fine stock is used it would have to be renewed in less than half that time.

Care of Equipment in Winter

Frost Danger Great Even with Most Experienced Operators

By J. Crow Taylor

THE common enemies of machinery and equipment in the winter time are rust and frost. Rust gets in its work most effectively when the equipment is idle and exposed to the weather. It can be guarded against by sheltering and by cleaning all metal parts of the equipment thoroughly, then applying paint or oil to protect the parts from moisture. There are any number of offerings to select from and there is nothing mysterious or mechanically difficult about the work of protecting equipment from rust. The main trouble all around is that people neglect it, and what we really need here more than anything else is a cure for neglect. Whether the equipment is idle or in use it is more affected by rust during the winter months. Get this fact in mind strongly enough to beget action and the balance is comparatively easy.

It is frost which brings the most serious question in the care and upkeep of the equipment during the winter months, and the frost may get in its work anywhere from the engine cylinders to all those metal parts of machines and equipment that are subject to strains and shock. Most of those in charge of quarry and crushing equipment are familiar with frost and its ravages in the steam and water pipes, and the damage it will do to valves, but that is not all of it, not by quite a lot. One day a broken engine was encountered in the rounds. The bedplate had snapped in two suddenly one frosty morning right after starting up, and the engineer in charge was very much puzzled about it. And yet it was nothing more nor less than a case of frost getting in its work, as was easily established by a few questions and their answers.

It was a rather cold morning, with more frost than usual and the engineer in starting up had evidently not given time enough to thoroughly warm the engine cylinder before closing the drain cocks and putting the engine to actual work. The result was a condensation of steam forming water between the piston and cylinder head, so that with the power of momentum behind it something had to give way. Because it was chilled with the frost and not able to resist the shock it was the main frame of the engine that snapped, making a complete wreck of the engine. Had it held the damage would probably have been limited to a broken cylinder head, piston head or a bent piston rod.

The instance is illustrative of how one familiar with and accustomed to looking out for frost in the steam and water pipe lines may not realize as he should the danger to the engine itself from frosty conditions. In frosty weather extra time must be given and extra care taken to thoroughly warm up all engine parts before putting it to work lest condensation lead to water in the cylinder with a wrecked engine as the result. And it is well to keep the drain cocks of the cylinder open much longer than usual till sure that it is working free from water, for water between the piston and cylinder heads of an engine means trouble.

Care of exposed pipe lines in winter rests largely in thorough drainage when not in use. This means open valves and careful adjustment of lines so that they will drain thoroughly and not accumulate water in sags or low places to freeze and rupture the pipes. Often the valves themselves must have special drainage or else the accumulated water in them will do damage. It is a well known fact that in exposed steam and water lines more valves are damaged through frost than through any other agency. At the present time the value of these is such as to easily justify some extra precautions to prevent damage and loss through frost.

Proper covering of exposed steam lines with insulating material not only reduces the danger from frost but it will generally effect a saving in steam loss through condensation that of itself will justify the insulation. With exposed water lines, which are quite common in quarry and crushing equipment, it is a somewhat different problem, and the way to safety lies largely through carefully taking out all sags in the pipe so as to insure thorough drainage when open and a careful draining out of the water at night and during other shutdowns. And, as stated above, not only must all valves be open, but in many cases it will be found necessary to have special drain cocks in the valves themselves to prevent damage from frost.

It is not only pipe lines and the engine, but much other equipment must be looked to and handled with special care when frosty. All metal parts of machinery and equipment subject to strain and shock are liable to sudden fracture while frosty, so the equipment must be handled with extra care, especially when first starting up to prevent accidents and breakdowns.

Thawing out with torches helps some, but often this surface thawing is so limited in its application and effect as to be deceiving. One of the best agencies for thawing metal parts is steam. With a length of steam hose and a nozzle one can do thawing without burning, and there is the added advantage that the steam hose will cut away and clean off accumulations of dirt and grease. In fact, a steam hose is a mighty handy thing to have around for killing off frost and driving away dirt.

Trap Rock Found in Texas—Tests by Bureau Show Great Strength

AUSTIN, Tex.—Recent tests made by the road building division of the Bureau of Economic Geology and Technology of the University of Texas are regarded as very important in view of the rapidly increasing interest being shown in road construction. While testing some trap rock taken from a deposit at Pilot Knob, seven miles from Austin, it was found that the strength of a 2-in. cube of this rock would carry a load of 215,520 lbs., or a unit load of 53,880 lbs. per square inch. To use an illustration, a 2-in. cube would support a granite column 1,000 ft. high and with a base 12 in. square, or two carloads of granite. This is probably the greatest strength of any rock that has ever been tested, according to the bureau, making it valuable as a road material.

This rock is black in color and very dense. It is known as a volcanic rock and an interesting feature of the deposit is the lava tunnel, the interior of which is walled with soft rock, in the midst of the extremely hard rock. The lava tunnel is very unusual from a geological standpoint and forms an interesting study in itself. An almost unlimited supply of construction material is offered by the deposit. At present the property is under private ownership and no effort is being made to commercialize it. Some effort has been made to make use of the rock as a road material but the lack of transportation facilities have so far precluded any extensive use of it.

A similar deposit is found at Knippa, the Uvalde county, and is being used extensively. Several streets in both Austin and San Antonio were constructed in part with trap rock. It is said to be ideally adapted to road building on account of its great strength and it is expected that it will be more widely used in the period of road construction which is now about to be inaugurated on an unprecedented scale in Texas.

Highway Work Authorized in California

SAN FRANCISCO—The State Highway Commission of California is about to construct five miles of concrete roadway in Riverside County, from Thermal to a point near Mecca and will cost approximately $120,000. Also in Imperial County about eight miles of road work will soon be underway—the approximate cost $105,000.

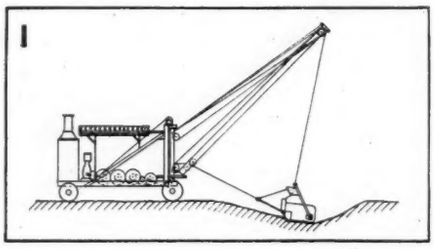
A rip-rap wall 6,000 ft. in length along the Los Angeles river near Vernon has been authorized by the Board of Supervisors of the Los Angeles County Flood Control District, to cost $60,000.

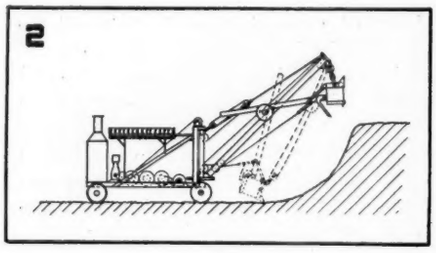
NEW MACHINERY AND EQUIPMENT

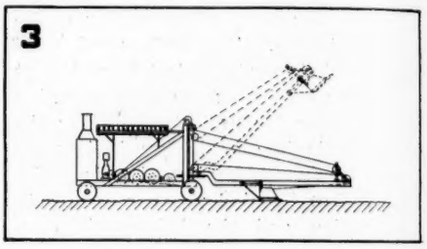
New Model Auto-Crane

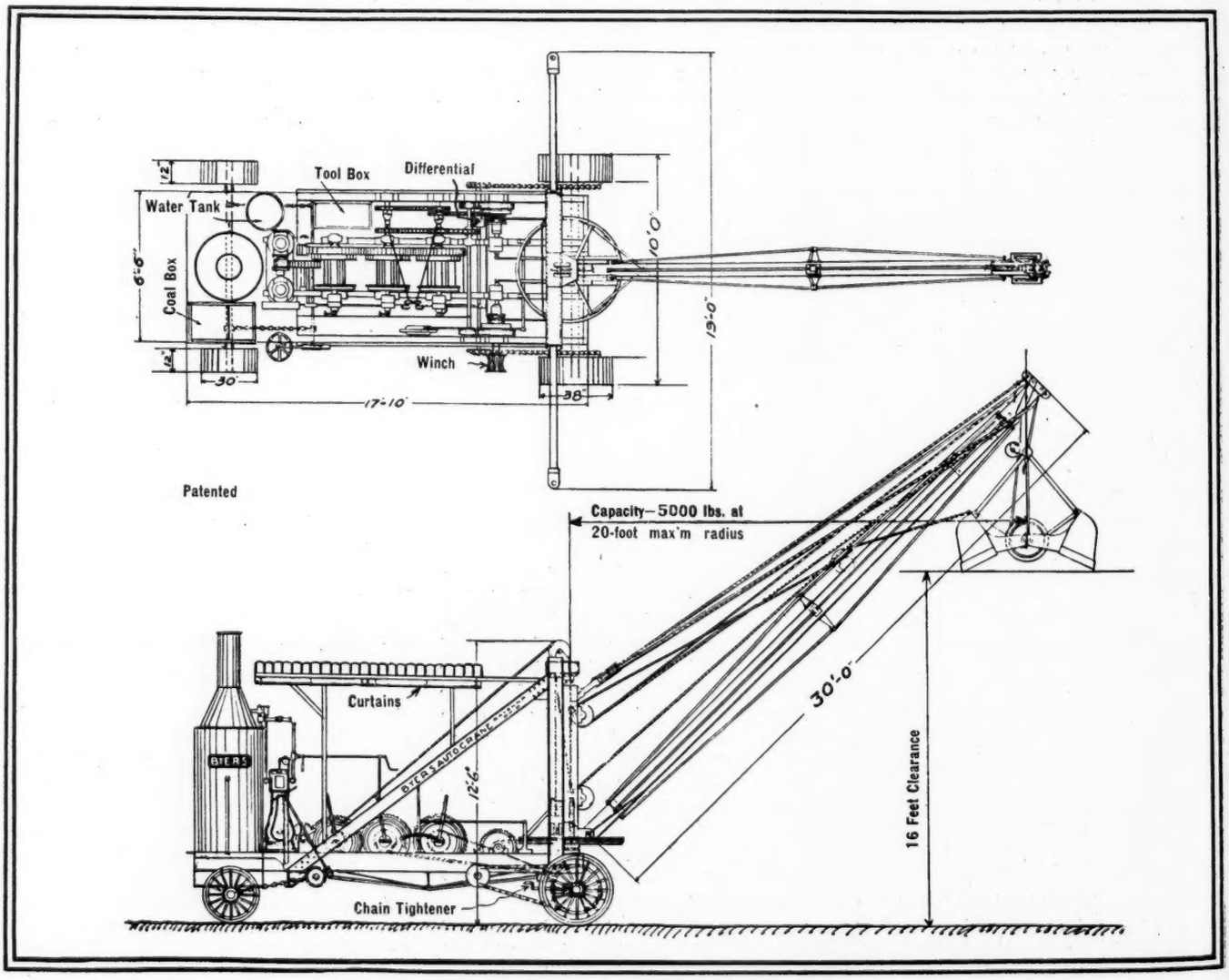
A PORTABLE DERRICK, which is capable of a large variety of uses about a stone or gravel plant, is illustrated herewith. To a limited extent such a machine can fulfill the part of a locomotive crane, and has the additional advantage of not requiring tracks. The new model traction derrick or crane made by the John F. Byers Machine Co., Ravenna, Ohio, is so constructed as to serve a variety of purposes also as the illustrations show.

Special attachments for this model are a skimmer scoop, steam-shovel boom and dipper and a drag-line. The drag-line attachment is a ½-yd. Page-type "S" bucket with necessary irons and fairleader; the steam-shovel bucket is ½-yd. capacity, while the ½-yd. skimmer scoop attachment is more particularly designed for shallow excavation work by contractors. An all-steel cab for the operator is provided if desired.









Byers portable derrick and special attachments

The Rock Products Market

Agricultural Limestone Wholesale at Plant, per Ton

EASTERN:

Cambria, N. Y.—(All thru 15 mesh) Analysis, $CaCo_3$, 93.94%; $MgCo_3$, 4.24% 2.00

Coldwater, near Rochester, N. Y.—(80% thru 100 mesh) Analysis, $CaCo_3$, 56.77%; $MgCo_3$, 41.74%..... 2.25@2.65

Danbury, Conn.—(50% thru 100) Analysis, $CaCo_3$, 96%; $MgCo_3$, 2%; ppr., $4.50; bulk..... 2.75

Hillsville, Pa.—(90% thru 100 mesh) in 80 lb. ppr. bags, $4.50; bulk..... 3.00

Jamestown, N. Y.—(90% thru 100 mesh)—Bags 2.50

Pownal, Vt.—(50% thru 100) Analysis, $CaCo_3$, 96%; $MgCo_3$, 2%; ppr., $4.50; bulk 2.75

Walford, Pa.—(70% thru 100 mesh; 90% thru 50 mesh; 50% thru 50 mesh; 100% thru 10 mesh; 50% thru 4 mesh), paper sacked..... 5.00
Bulk 3.00

West Stockbridge, Mass.—(50% thru 100) Analysis, $CaCo_3$, 96%; $MgCo_3$, 2%; ppr., $4.50; bulk..... 2.75

CENTRAL:

Alton, Ill.—(Pulv. and 90% thru 50 mesh; 90% thru 4 mesh) Analysis, $CaCo_3$, 96%; $MgCo_3$, 75%..... 2.00

Bedford, Ind.—(90% thru 10 mesh) Analysis, $CaCo_3$, 98.5%; $MgCo_3$, 0.5% 1.75

Columbia, Ill., near East St. Louis —(⅛" down) ..... 1.25@1.80

Elmhurst, Ill. — Analysis, $CaCo_3$, 29.43%; $MgCo_3$, 20.69%..... 1.00

Greencastle, Ind.—(50% thru 50 mesh) Analysis, $CaCo_3$, 98%..... 1.75

Lannon, Wis.—(50% thru 50 mesh) Analysis, 53.35%, $CaCo_3$; 43.27% $MgCo_3$ 2.00

Marble Cliff, O.—(50% thru 100 mesh) Analysis, $CaCo_3$, 86%; $MgCo_3$, 8%.... 3.00

Marblehead, O.—(50% thru 100 mesh: 60% thru 50 mesh: 100% thru 10 mesh)—Analysis (Min.), $CaCo_3$, 32.03%; $MgCo_3$, 3.75%. Bulk, $3.00; ppr. 80 lb. sack..... 4.50

McCook, Ill.—(90% thru 4 mesh)..... .75@1.00

McCook, Ill.—(100% thru ¼" sieve; 78.12% thru No. 10; 53.29% thru No. 20; 38.14% thru No. 30; 26.04% thru No. 50; 16.27% thru No. 100) Analysis, $CaCo_3$, 54.10%; $MgCo_3$, 45.04% ..... 1.00@1.25

Milltown, Ind.—Analysis, $CaCo_3$, 98% 1.50

Montrose, Ia.—(90% thru 100 mesh).. 1.25@1.50

Muskegon, Mich.—(50% thru 50 mesh) Analysis, $CaCo_3$, 53.35%; $MgCo_3$, 43.27% ..... 1.50@2.00

North Industry, O.—(50% thru 100 mesh; and pulverized limestone) Analysis, $CaCo_3$, 91%; $MgCo_3$, 1.63% 3.00

Piqua, O.—(70% thru 100 mesh)..... 2.50@4.00

Rockford, Ill. — Analysis, $CaCo_3$, 53.75%; $MgCo_3$, 44.35%..... 1.25

Stolle, Ill. (near East St. Louis on I. C. R. R.)—(Thru ⅛" mesh) Analysis, $CaCo_3$, 89.61 to 89.91%; $MgCo_3$, 3.82% 1.50

Stone City, Ia.—(50% thru 100 mesh) .50

Whitehill, Ill. — Analysis, $CaCo_3$, 96.12%; $MgCo_3$, 2.50%—
90% thru 100 mesh, bags..... 5.00
90% thru 50 mesh, bulk..... 1.50

SOUTHERN:

Brooksville, Fla. — Pulverized limestone 1.80

Cartersville, Ga.—(50% thru 100 mesh) Analysis, combined carbonates, 96% 3.50

Fletcher, N. C.—(100% thru 10 mesh) Analysis, $CaCo_3$, 90%; $MgCo_3$, 80%. Paper, $3.75; bulk..... 2.25

Irvington, Ky.—(50% thru 4 mesh).... 1.90

(Continued on next page.)

Wholesale Prices of Crushed Stone

Prices given are per ton. F. O. B., at producing plant or nearest shipping point

Crushed Limestone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
EASTERN:						
Auburn and Syracuse, N. Y.	.80	1.20	1.20	1.20	1.20	1.20
Buffalo, N. Y.	1.25, all sizes from stock piles.					
Burlington, Vt.			2.50	2.00	1.75	
Coldwater, nr. Rochester, N. Y.			Flux, 1.50@2.10		(local)	
Grove, Md.			2.25	2.05	1.65	1.50
Hagerstown, Md.	$2.00 for all sizes					
Hull, Canada	1.20	1.20	1.20	1.05	.80	
North Leroy and Akron, N. Y.	$1.00 for all sizes, including R. R. ballast					
Walford, Pa.	1.25	1.50	1.50	1.50	1.50	1.50
CENTRAL:						
Alden, Ia.	.20		1.00	1.00		
Chicago District	.80	1.00	.80	.80	.80	.80
Columbia, Ill. (near E. St. L.)..	1.25@1.80	.85@1.20	.95@1.30	.95@1.30	.80@1.20	
Detroit, Mich.	Various sizes $1.50 per net ton					
Dundas, Ont.	.65	1.10	1.10	1.10	.90	.90
Eden and Knowles, Wis.	.80	.80		1.00	1.00	1.00
Ft. Wayne, Ind.	Various sizes $1.60 per net ton					
Illinois, Southern	1.50	1.50	1.50	1.50	1.25	1.25
Greencastle, Ind.	.90@1.25	1.10	1.00	.90	.90	.90
Lannon, Wis.				1.10 all sizes		
Lewisburg, O.	1.00		1.10	1.00	1.00	1.00
Lima, Ohio	1.00			1.10 all sizes		
Linwood, Scott Co., Ia.	.50		1.13	1.05	1.13	
Mankato, Minn.				1.25	1.00	
Mayville, Wis.	.75	.75	.75	1.10	1.10	1.10
McCook, Ill.	1.00@1.25	1.50@1.65	.90@1.10	.70@ .90	.70@ .85	.70@ .85
Montrose, Ia.		1.10@1.20	1.10@1.20	1.00@1.10	1.00@1.10	1.25@1.35‡
Oshkosh, Wis.	1.00 in all sizes, Blue Limestone					
Ottawa, Can.	1.90	2.00	2.00	1.75	1.50	
River Rouge, Mich.	.90@1.00	1.25	1.25	1.25	1.25	1.25
Rockford, Ill.	1.25			1.25	1.25	1.25
Sheboygan, Wis.	.80@1.00 for all sizes					
Sherman and Hamilton, Wis.	All sizes $1.00 per ton					
Stone City, Ia.	.50	(1-inch 1.20)		1.10	1.00	
Toledo, Ohio	1.60	1.80	1.80	1.80	1.70	1.70
Toronto, Can.	.65	1.10	1.10	1.10	.90	.90
SOUTHERN:						
Brookville, Fla.				2.50		
Cartersville, Ga.		2.40	2.30	2.30	2.20	2.10
Fort Springs, W. Va.	.50	1.60	1.60	1.45	1.40	1.10
	Railway ballast 1.10 per cu. yd.					
Irvington, Ky.	.75			.90	.90	
Mascot, Tenn.		1.00				
Stephensburg, Ky.	1.20 any size					
Winnfield, La.	1.20	1.80	1.80	1.80	1.80	1.80
WESTERN:						
Atchison, Kans.	.50	1.50	1.50	1.50	1.40	1.40
			Rip-Rap @ 1.00			
Blue Springs & Wymore, Neb.	(Florence flint imbedded in limestone)					
	.15	1.35	1.35	1.25	1.15	1.10
Carthage, Mo.	1.50	1.50	1.25	1.25	1.25	1.25
El Paso, Tex.	.90 for all sizes					
Kansas City, Mo.	.60	1.35	1.35	1.35	1.35	1.35

Crushed Trap Rock

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Baltimore, Md. (vicinity)	1.25	3.15	2.75	2.50	2.40	
Birdsboro, Pa.	1.25	1.80	1.70	1.50	1.50	1.25
Duluth, Minn.—Trap	.65@ .75	1.35@1.50	1.25@1.35	1.15@1.25	1.15@1.25	
Glen Mills and Rock Hill, Pa. —Trap	1.10	1.40	1.80	1.60	1.60	1.40
		R. R. ballast 1.40				
Little Rock, Ark.—Trap		1.75		1.75	1.50	1.35a
Millington, N. J.	1.75	1.85	1.75	1.75	1.60	
Montrose, Ia.—Trap		1.10@1.20	1.10@1.25	1.05@1.10	1.00@1.10	
Morristown, N. J.—Trap	1.85	1.75	1.75	1.60	1.40	1.40
New Britain, Conn.	.75	1.30	1.25	1.20	1.00	
North Brandford, Conn.—Trap	.80	1.30	1.25	1.20	1.10	
Richmond, Cal.—Trap			1.75	1.65	1.65	
Westfield, Mass.—Trap	.60	1.00	1.10	1.00	.90	

Miscellaneous Crushed Stone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Fair Oaks, Calif.—Cr. Bldrs.	.85	1.05	.95	.85	.85	
Hendlers, Pa.—Quartzite	.75	1.00	1.35	1.25	1.00	1.00‖
Little Falls, N. Y.—Syenite	.60	Other sizes 1.00, including R. R. ballast				
Richmond, Va. (Quarry)	1.00@1.75	1.40@1.75	1.40@1.75	1.40@1.75	1.40@1.75	1.40
Stephensburg, Ky.	1.26 per cu. yd. any size Basalt and other kinds					
Stockridge, Ga.—Granite	.50	2.50	2.50	2.25	2.25	2.00
Toledo, O.—Slag	.75@1.25	.85@1.40	.85@1.40	.85@1.40	.85@1.25	.85@1.25

*Cubic yard. †Agrl. lime. ‖R. R. ballast. §Flux. ‡Rip-rap. a 3-inch and less.

Agricultural Limestone Wholesale at Plant, per Ton

(Continued from preceding page.)

Keystone, Ala.—(90% thru 50 mesh) Analysis, $CaCo_3$, 99.50%; $MgCo_3$, none	1.25
Mascot, Tenn.—Analysis, $CaCo_3$, 52%; $MgCo_3$, 38%.	
(90% thru 100 mesh)	2.50
(50% thru 100 mesh)	1.75
(75% thru 200 mesh)	3.50
Paper bags, $1.50 extra per ton; burlap, $2.50 extra per ton.	
Stephensburg, Ky.—Analysis, $CaCo_3$, 98%	1.20
Winnfield, La.—(50% thru 50 mesh)	3.00
WESTERN:	
Cement, Cal.—Analysis, $CaCo_3$, 95%; $MgCo_3$, 1% (50% thru 100 mesh)	4.00@5.00
Elsberry, Mo.—(Pulverized) Analysis, $CaCo_3$, 99.29%	1.85@1.95
Fresno, Cal.—(All thru 40 mesh) Analysis, $CaCo_3$, 98%; $MgCo_3$, 1%. (50% and 40% thru 200 mesh) sacked, $5.50; bulk, $5.00. (100% thru 40 mesh) sacked, $5.25; bulk	4.75
Kansas City, Mo.—(50% thru 100 mesh)	1.50

Miscellaneous Sands per Ton at Plant

Silica sand is quoted washed, dried and screened, unless otherwise stated.

GLASS SAND:	
Berkeley Springs, W. Va.—Glass	2.50@3.00
Bowmanstown, Pa.—Glass sand	2.50
Cedarville, N. J.—Glass	1.50@4.00
Hellam, Pa.—Glass	2.00
Daguscahonda, Pa.—Glass	2.75
Dundee, Ohio—Glass	2.00@2.25
Gray's Summit, Mo.—Glass	2.00@2.50
Kermit, Va.—Glass sand:	
Washed	2.25@2.75
Crushed	1.75@2.00
No. 2	1.00@1.25
Mapleton, Pa.—Glass, damp	3.00
Glass, dry	3.50
Massillon, Ohio—Glass	2.00
Michigan City, Ind.—Glass sand	.30@ .40
Millington, Ill.—Glass	2.00@2.50
Mineral Ridge, O.—Glass	1.75@2.75
Montreal, Can.—Glass	3.00@3.50
Montoursville, Pa.—Glass	1.25@2.00
Oregon and Wedron, Ill.—Glass	2.00@2.50
Ottawa, Ill.—Silica	2.00@2.50
Sands, Elk Co., Pa.—Glass sand:	
Washed, wet	2.50
Selected, green	2.50
Silica and Pacific, Mo.—Glass	2.00@2.50
St. Mary's, Pa.—Glass sand—Green	2.50@3.00
South Vineland and Cedarville, N. J.—Glass	2.00
Sugar Grove, Ohio—Glass	2.00@2.25
Thayer, W. Va.—Glass	2.75
FOUNDRY SAND:	
Albany District, N. Y.—Molding	2.00@2.50
Allentown, Pa.—Moulding	1.40@1.50
Bowmanstown, Pa.—Molding	1.50
Cleveland, O.—Moulding	1.25@1.75
Cleveland, O.—Core, at pit	.33@ .75
Fleetwood, Pa.—Silica heating	2.15
Kansas City, Mo.—Core	1.00
Montreal, Can.—Molding	2.75@3.25
Mapleton, Pa.—Molding, damp	3.00
Molding, dry	3.50
Michigan City, Ind.—Core	.30@ .40
Millington, Ill.—Core, damp	1.50
New Lexington, Stamden and Layland, Ohio—Moulding	2.00@2.25
Ohio—Various points:	
Fine molding	2.00@2.25
Coarse molding	1.75@2.00
Shipments between Nov. 1 and April 1, 75c per ton added.	
Utica, Ill.—Molding	.75@1.00
West Albany, N. Y.—Molding	2.25@5.00
Zanesville, O.—Moulding	2.00@2.25

Wholesale Prices of Sand and Gravel

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

Washed Sand and Gravel

City or shipping point	Fine Sand, 1/10 inch down	Sand, ¼ inch and less	Gravel, ½ inch and less	Gravel, 1 inch and less	Gravel, 1½ inch and less	Gravel, 2 inch and less
EASTERN:						
Bowmanstown, Pa.		1.20	1.10			
Buffalo, N. Y.			1.25 cu. yd., all sizes			
Buffalo, N. Y. (Niagara River)	1.00	.85	.80	.80	.80	.80
Libby's Pit, Leed's Junct., Me.	1.00@1.15	.50@ .75	1.50	1.45	1.35	1.25
Morristown, N. J.		.50@ .55	.95@1.00	.95@1.00	.95@1.00	
No. Wilbraham, Mass.		.50*	1.75*		1.20*	1.05*
Pittsburgh, and McKeesport, Pa.		1.25@1.50			1.05	1.05
Washington, D. C.	.75	.75	2.00	1.70	1.40	1.20
Washington, D. C.—Wharves		.75	2.00	1.40	1.20	1.20
CENTRAL:						
Algonquin, Ill.			All grades .50 per cu. yd. (3,000 lbs.)			
Barton, Wis.	.75	.70	1.00	.70	.70	.70
Beloit, Wis.	.40	.40	.50	.40	.40	.40
Chicago, Ill.		.95@1.05			.95@1.05	
Cincinnati, Ohio	.40@ .50	.40@ .50	.40@ .50	.50@ .60	.50@ .60	.50@ .60
Columbus, Ohio		.60	.50	.60	.60	.60
Des Moines, Ia.	.50	.50	1.50	1.50	1.25	1.25
Elgin, Ill.		.50	.50	.50	.50	.50
Escanaba, Mich.	1.00	1.00	1.20	1.20	1.00	1.00
Hawarden, Ia.	.40@ .60	.40@ .60		.95@1.25.		.85@1.00
Greenville and Mechanicsburg, Ohio	.50	.50	.60	.60	.60	.60
Illinois, Northern	.60@ .70	.60@ .70	.70@ .80	.60@ .70	.60@ .70	.50@ .60
Indianapolis, Ind.	.50	.50		.65	.65	.65
Janesville, Wis.		.50@ .75			.50@ .75	
Kalamazoo, Mich.	.50@ .60	.50@ .60	.50@ .70	.60@ .80	.60@ .80	.60@ .80
Mason City, Ia.	.60	.50	1.10@1.20	1.20	1.00@1.20	1.00@1.20
			Railway ballast and road work, .40			
Milford, Ind.		.60			.70	
Milwaukee, Wis.	1.06 for all sizes					
Minneapolis, Minn.	.50* 2800 lbs.	.50* 2800 lbs.	1.25* 2600 lbs.	1.20* 2600 lbs.	1.15* 2600 lbs.	1.10* 2600 lbs.
Moline, Ill.		1.00 yd. strge.				
Montezuma, Covington, Ind.	.75	.75	.75@ .85	.75	.75	.75
Niles, Mich.		.50@ .80	.60@ .85	.50@ .80	.50@ .80	.50@ .80
Sabula, Ia.	.40@ .60	.40@ .60	1.00	1.00	1.00	1.00
Saginaw, Mich.	.95	.95	1.85	1.85	1.60	1.60
St. Paul, Minn.	.65*	.65*	1.75*	1.25	1.15*	1.15*
Terre Haute, Ind.	.75	.75	.85	.75	.75	.75
Wabash Valley District, Ind.			All sizes, .75.			
Winona Lake, Ind.		.75				.95
Winona, Minn.	.60@ .90	.60@ .90	1.00@1.40	1.00@1.40	.95@1.25	.95@1.25
SOUTHERN:						
Charleston, W. Va. (River)		1.20@1.30	1.30	1.30	1.30	1.30
Lake Weir, Fla.		.50				
Jackson and Roseland, La.		.50	1.00	1.00	1.00	
Knoxville, Tenn.	.85@ .90	.85@ .90	1.00@1.50	1.00@1.50	.95@1.40	.95@1.40
Pelzer, S. C.	.55					
Valde Rouge, La.		.75*@1.00*	2.10*	2.00*	1.50*	1.25*
Waco, Tex.	.75	.75	1.20	1.20	1.00	1.00
WESTERN:						
Joplin, Mo.	1.00	.60	.45	1.50	1.25	2.00
Kansas City, Mo.		Car lots, building sand, @ .60; retail truck 1.50*				
Lincoln, Neb.—(Pit)	.55	.55	1.50	1.50	1.50	1.40
Pueblo, Colo.	.80*	.60*			1.50*	
Roche Spur, Tulare Co., Cal.			.35 River sand ¼ inch			
San Francisco, Cal.			1.15 for all grades gravel.			
Seattle, Wash.	1.25*	1.25*	2.00*	1.25*	1.25*	1.25*
Vancouver, B. C. (Scows)		1.45*	1.70*	1.65*	1.65*	1.45*

Bank Run Sand and Gravel

City or shipping point	Fine Sand, 1/10 inch down	Sand, ¼ inch and less	Gravel, ½ inch and less	Gravel, 1 inch and less	Gravel, 1½ inch and less	Gravel, 2 inch and less
EASTERN:						
Attica, N. Y.	.50	.50	.60	.60	.60	.60
Boonville, N. Y.	.45@ .60	.40@ .60				.60
Burnside, Sand Pit, Conn.	All sand, .80 cu. yd.					
Lowell Junction, Mass.		.50*@ .75*				1.25*
Pittsford, N. Y.		.50				
Yardville, N. J.		.50@ .75				
York, Pa.		.90@1.10	(crushed rock)			
CENTRAL:						
Cleveland, Ohio			1.00@1.75 bank sand			
Covington, Ind.					.60	.60
Des Moines, Ia.—Concrete mix., 20% to 30% gr., .60; 50% gr. .80						
Escanaba, Mich.			.85 for all sizes			
Indianapolis, Ind.			Concrete mix, .55			
Janesville, Wis.					.50@ .75	
Milford, Ind.					.50	
Moline, Ill.					1.00 yd. stge.	
Portsmouth, Ohio		.65		.85		
Sabula, Ia.						.50@ .70
Saginaw, Mich.—(River dock)	.50		1.20	1.20		
Terre Haute, Montezuma, Ind.	.60				.60	.60
Toledo, Ohio						.55@1.00
Wabash Valley District, Ind.			.75 for all sizes			
Winona, Minn.			Pit run gravel under 2-in., .60@.90			
SOUTHERN:						
Howcott, La. (50% and up in rock content)						.65
Joplin, Mo.	.75	.60	.40			
Knoxville, Tenn.	.85@ .90					
Lindsay, Tex.			.44	.44		
Memphis, Tenn.	.65@ .90	.65@ .90			.85@1.10	.85@1.10
			Sand and gravel mixed for concrete, .85@1.10			
Valde Rouge, La.			Gravel 60% metal on ⅛" screen, .60 per ton			
WESTERN:						
Pueblo, Colo.			River Run .60 unscreened			
Vancouver, B. C.		.85@1.10		1.00@1.25		.85@1.00

* Cubic yard. B Bank. L Lake. ‖ Ballast.